

1892. Bull. Sci. Lab. Denison Univ, 6: 57-74,  
2 pls.

cop. covered  
D. pallidus, p. 69.

NOTES UPON THE CLADOCERA, COPEPODA, OSTRACODA AND ROTIFERA OF CINCINNATI, WITH DESCRIPTIONS OF NEW SPECIES.

By C. H. TURNER.

[Plates I-II.]

This paper does not pretend to be a monograph of the Rotifera and Micro-crustacea of this locality. It is but the embodiment of the results of a three months' study of the Micro-crustacea and the Rotifera of Cincinnati, Ohio, and the neighboring country. It is not probable that all the species of this locality have been encountered. No doubt many interesting forms await the discriminating gaze of the patient investigator. Yet, it is hoped that the present paper will give a fair idea of the micro-carcinological and of the rotiferon fauna of this neighborhood.

In a paper of such modest pretensions, it is not deemed necessary to re-describe well known species. Nor is it thought wise to give the complete bibliography of each species. Therefore, the author has contented himself with appending to each known species only such facts as may prove of interest to other workers in this line; and to referring to one or two standard works, in which a complete description will be found.

In this connection, I gratefully express my indebtedness to Professor C. L. Herrick, who kindly placed at my service his extensive collection of papers upon this subject. Without such literary aid this paper would not have been attempted.

PART I, ROTIFERA.

The arrangement of this portion of this paper is the same as that followed by Messrs. Hudson and Gosse, in their monograph upon "The Rotifera, or Wheel-animalcules, Both British and Foreign." London: Longmans, Green & Co., 1889.

## ORDER I, RHIZOTA.

## FAMILY FLOSCULARIDAE.

## I GENUS FLOSCULARIA, Oken.

Sp. 1. *Floscularia ornata*, Ehrenberg.

*Floscularia ornata*, Hudson and Gosse. The Rotifera, or Wheel-animalcules, Vol. I, p. 50; pl. I, fig. 9.

*Floscularia ornata*, C. L. Herrick. Bull. of Sci. Lab. of Denison Univ., Vol. I, p. 47.

This species is not very abundant in this locality. It is occasionally found attached to the roots of the duck weed (*Lemnaea polyrrhiza*, L.)

## ORDER II. BDELLOIDA.

## FAMILY PHILODINADAE.

## II GENUS PHILODINA, Ehrenberg.

Sp. 2. *Philodina roseola*, Ehrenberg.

*Philodina roseola*, Hudson and Gosse, The Rotifera, or Wheel-animalcules, Vol. I, p. 99; pl. IX, fig. 4.

This species is abundant in all of our pools that contain water plants. Occasionally it adopts unique habitations. I have often found one or more of them inhabiting the cast off shells of some cladocera.

Sp. 3. *Philodina megalotrocha*, Ehrenberg.

*Philodina megalotrocha*, \* \* \* Hudson & Gosse, The Rotifera, or Wheel-animalcules, Vol. I, p. 101; pl. IX, fig. 7.

This species appear to be quite rare. I have encountered it but once. Then it was found among a mass of filamentous algae which had been gathered from a shallow meadow pool. There it was quite abundant.

## III. GENUS ROTIFER, Schrank.

Sp. 4. *Rotifer vulgaris*, Shrank.

*Rotifer vulgaris*, \* \* \* Hudson and Gosse, The Rotifera, or Wheel-animalcules, Vol. I, p. 104; pl. X, fig. 2.

This species inhabits a few of our stagnant ponds. It is found in company with *Cyclops viridis*, Jurine, naiad worms and other filth-loving creatures.



## ORDER III. PLOIMA.

## SUB-ORDER. IL-LORICATA.

## FAMILY. ASPLANCHNADAE.

## IV. GENUS ASPLANCHNA, Gosse.

Sp. 5. *Asplanchna cincinnatiensis*, sp. n.

[Plate I; Fig. 4, 5.]

To the naked eye this beautifully transparent specimen resembles a miniature sea-urchin.

Body of female saccate, free from humps, widest caudad of the middle. The eye is single, cervical. When viewed by transmitted light, the eye appears to be dark brown or black. Trophi incudate, not enclosed in a mastax. Rami pointed, extremity unnotched, unserrated. About half way between the distal and the proximal extremity of each ramus a large tooth projects entad. In the adult female the trophi, when at rest, are usually lateral and situated in the cervical region. In the young they are usually median. Flocculent ribbon double, the laterad portion is convoluted at its two extremities; while the mesad portion is straight and bears about fifteen vibratile tags. Gastric glands oval. These animals often contain several embryos at the same time. The nearest ally to this species is *A. brightwellii*, Gosse; from this our specimen is readily distinguished by the pointed, unnotched rami

Habitat: clear stagnant water, containing plant life. This species is not widely distributed but is very abundant where it does occur. Either this or a closely allied species has been encountered in clear stagnant pools that do not contain water plants. Length about 1 m.m.

The Brachionidae and allied forms appear to form the chief food of this species. I have seen individuals with the remains of two brachionids (*Brachionis urceolaris*, Ehrenberg), in its stomach at the same time. On another occasion I saw them gorged with the remains of *Anuraea cochlearis*, Gosse.

## SUB-ORDER. LORICATA.

## FAMILY. RATTULIDAE.

## V. GENUS MASTIGOCERCA, Gosse.

Sp. 6. *Mastigocerca rattus*, Ehrenberg.

*Mastigocerca rattus*, \* \* \* Hudson and Gosse, The Rotifera or Wheel-animalcules; Vol. II, p. 62; pl. XX, fig. 9.

*Monocerca rattus*, \* \* \* C. L. Herrick, Bull. Sci. Lab. of Denison Univ., Vol. I, p. 51.

This species is not widely distributed but is abundant among the roots of the duckweeds (*Lemnaea polyrrhiza*, L.) of a few of our ponds and canal basins.

#### VI. GENUS RATTULUS, Ehrenberg.

Sp. 7. *Rattulus tigris*, Mueller.

*Rattulus tigris*, \* \* \* Hudson and Gosse, The Rotifera, or Wheel-animalcules, Vol. II, p. 65; pl. XX, fig. 13.

*Diurella tigris*, \* \* \* C. L. Herrick, Bull. Sci. Lab. Denison Univ., Vol. I, p. 49.

This species is very abundant in our weedy canal basins.

#### FAMILY DINOCHARIDAE.

#### VII. GENUS SCARIDIUM, Ehrenberg.

Sp. 8. *Scaridium longicaudum*, Ehrenberg.

*Scaridium longicaudum*, \* \* \* Hudson and Gosse, The Rotifera or Wheel-animalcules, Vol. II, p. 65; pl. XXI, fig. 13.

Although not widely distributed, this species is quite abundant among the roots of the duckweed (*Lemnaea polyrrhiza*, L.) in the few ponds and canal basins where it does occur.

#### FAMILY SALPINADAE.

#### VIII. GENUS SALPINA, Ehrenberg.

Sp. 9. *Salpina mucronata*, Ehrenberg.

*Salpina mucronata*, \* \* \* Hudson and Gosse, The Rotifera, or Wheel-animalcules, Vol. II, p. 83; pl. XXII, fig. 1.

This species is found in all of our weedy pools.

Sp. 10. *Salpina brevispina*, Ehrenberg.

*Salpina brevispina*, \* \* \* Hudson and Gosse, The Rotifera, or Wheel-animalcules, Vol. II, p. 65; pl. XXII, fig. 4.

This is covered with impressed dots as described by Hudson and Gosse. This species is not so abundant as *S. mucronata*.

#### FAMILY EUCHLANIDAE.

#### IX. GENUS EUCHLANIS, Ehrenberg.

Sp. 11. *Euchlanis dilitata*, Ehrenberg.

*Euchlanis dilitata*, \* \* \* Hudson and Gosse, The Rotifera or Wheel-animalcules, Vol. II, p. 90; pl. XXIII, fig. 5.



*Euchlanis (dilitata) hipposideros*, \* \* \* C. L. Herrick, Bull. Sci. Lab. Denison Univ., Vol. I, p. 47; pl. III, fig. 2.

This is very abundant in those ponds that contain *Lemnacca polyrrhiza*, L.

Sp. 12. *Euchlanis triquetra*, Ehrenberg.

*Eucelanus triquetra*, \* \* \* Hudson and Gosse. The Rotifera or Wheel-animalcules, Vol. II, p. 91; pl. XXIII, fig. 4.

This species is not common.

#### FAMILY CATHYPNADAE.

##### X. GENUS CATHYPNA, Gosse.

Sp. 13. *Cathypna ohioensis*, Herrick.

*Distyla ohioensis*, \* \* \* C. L. Herrick, Bull. Sci. Lab. of Denison Univ., Vol. I, p. 54; pl. XII, fig. 1.

This species is not common. It has been encountered once or twice in our canal basins.

Sp. 14. *Cathypna leontina*, sp. n.

[Plate I; Fig. 12.]

Lorica smooth, sub-ellipsoidal, cephalad margin excavated. Dorsal valve larger than the ventral. Caudad margin of the dorsal valve furnished with a projecting plate. Eyes ellipsoidal. Toes two, rod-like. Near the distal extremity of each toe, there is a small lateral tooth. From this tooth the toe slopes obliquely to a terminal point.

There is a deep lateral invagination and the animal has the habit of retaining its head within the lorica; these two traits render this species a *Cathypna* and not a *Distyla*. This species is separated from *Cathypna ohioensis*, Herrick, its nearest ally, by the smooth lorica and the structure of the toe.

This species is very rare. So far it has been encountered in but one small, weedy pool. Even there it is only occasionally seen.

##### XI. GENUS MONOSTYLA, Ehrenberg.

Sp. 15. *Monostyla lunaris*, Ehrenberg.

*Monostyla lunaris*, \* \* \* Hudson and Gosse, The Rotifera, or Wheel-animalcules, Vol. II, p. 98; pl. XXV, fig. 2.

This species is not common. Occasionally, it is found in our weedy pools.

Sp. 16. *Monostyla quadridentata*, Ehrenberg.

[Plate I; Fig. 10.]

*Monostyla quadridentata*, \* \* \* Hudson and Gosse, The Rotifera or Wheel animalcules, Vol. II, p. 100; pl. XXV, fig. 3.

*Monostyla quadridentata*, \* \* \* C. L. Herrick, Bull. Sci. Lab. Denison Univ., Vol. I, p. 53; pl. IV, fig. 3.

This species is abundant in all of our fresh water ponds.

Sp. 17. *Monostyla truncata*, sp. n.

[Plate I; Fig. 11.]

Lorica subovate, cephalad margin truncate, straight, caudad margin convex. Eye single, median, near the mastax. Mastax large, trophi sub-malleate. Foot moderate, non-contractile, terminating in a single toe.

In the specimen examined, the cephalad extremity of the body appeared to be bifurcate; this may have been an illusion due to the point of view.

This species is very rare. I have seen only one specimen. The truncated cephalad margin of the lorica serves to distinguish this species from all others.

#### FAMILY COLURIDAE.

#### XII. GENUS METOPIDIA, Ehrenberg.

Sp. 18. *Metopidea, bractea*, Ehrenberg.

*Metopidia bractea*, \* \* \* Hudson and Gosse, The Rotifera, or Wheel-animalcules, Vol. II, p. 109,

*Squamella bractea*, \* \* \* C. L. Herrick, Bull. Sci. Lab. of Denison Univ., Vol. I, p. 54; pl. IV, fig. 2.

This species is not abundant.

Sp. 19. *Metopidia elliptica*, sp. n.

[Plate I; Fig. 8.]

Lorica smooth, sub-elliptical, about twice as long as broad. Caudad margin of ventral valve excavated. From the cephalad extremity of the body, two small, but conspicuous, lateral ears project. Joints of the foot sub-equal. The two terminal toes pointed, and as long as the remainder of the foot.

This species is not common. It is occasionally encountered in pools covered with monocellular algae.



Sp. 20. *Metopidia dentata*, sp. n.

[Plate I; Fig. 9.]

In the shape of the lorica, this species resembles *M. elliptica*.

Lorica smooth sub-elliptical, cephalad margin excavated. From the bottom of the cephalad excavation of the ventral portion of the lorica, a convex tongue projects half way to the cephalad extremity of the lorica. Caudad margin of the ventral valve excavated. The distal joint of the foot about as long as the combined length of the other two. The terminal toes are about as long as the distal joint of the foot. At the base each toe is supplied with a small, sharp, lateral spine.

Length of lorica about 104 micro-millimetres; breadth, about 65 micro-millimetres.

This species is very rare. Having seen it but once, I do not put much stress upon the convex tongue seen upon the cephalad portion of the ventral valve. I fear that that may be only a chance variation. But the relative lengths of the joints of the feet, the relative length of the toes, the spines at the base of the toes—all these are characters which distinguish it from *M. elliptica*, its nearest ally.

#### FAMILY PTERODINADAE.

##### XIII. GENUS PTERODINA, Ehrenberg.

Sp. 21. *Pterodina patina*, Ehrenberg.

*Pterodina patina*, \* \* \* Hudson and Gosse, The Rotifera, or Wheel-animalcules, Vol. II, p. 112; pl. XXVI. fig. 11.

*Pterodina patina*, \* \* \* C. L. Herrick, Bull. Sci. Lab. of Denison Univ., Vol. I, p. 59; pl. I, fig. 3.

This species is very abundant around the roots of the duckweeds (*Lemnaea polyrrhiza*, L.) of our larger ponds and canal basins.

#### FAMILY BRACHIONIDAE.

##### XIV. GENUS BRACHIONUS, Ehrenberg.

Sp. 22. *Brachionus pala*, Ehrenberg

*Brachionus pala*, \* \* \* Hudson and Gosse, The Rotifera, or Wheel-animalcules; Vol. II, p. 117; pl. XXVII. fig. 3; and pl. XXVIII, fig. 3.

This species is occasionally encountered in one or two of our shallow meadow pools. The specimens encountered so far resemble

what Ehrenberg has called *Brachionus ampliceros*. Hudson and Gosse consider this to be a variety of *B. pala*.

Sp. 23. *Brachionus urceolaris*, Ehrenberg.

*Brachionus urceolaris*, \* \* \* Hudson and Gosse, *The Rotifera, or Wheel-animalcules*, Vol. II, p. 118; pl. XXVII, fig. 6.

It is not easy to decide whether the species here described is *B. urceolaris* or *B. rubens*. After some hesitation I have considered it to be the former. I append a description:

Lorica sub-quadrangular, longer than broad. Cephalo-dorsad margin of the lorica bearing six straight teeth. Lateral teeth largest, Middle pair next in size. None of the teeth very large, the lateral teeth, however, are relatively larger than the corresponding teeth of the British species. Between the middle teeth there is a shallow, concave, depression. From the base of the tooth to the bottom of this depression is about as long as the height of the tooth. Cephalo-ventrad margin of the lorica slightly elevated and indented at the meson. Laterad margin of lorica straight, caudad margin convex. No caudal spines. A sub-square orifice in the middle of the caudo-ventrad margin of the lorica serves for the exit of the very flexible, wrinkled, foot. This orifice is bordered by two lateral papillae.

This species is often encountered in ponds containing plant life. Either this or a closely allied species is often found attached to the lorica of *Moina paradoxa*, Weismann.

Sp. 24. *Brachionus bakeri*, Ehrenberg.

[Plate I; Figs. 1-3.]

*Brachionus bakeri*, \* \* \* Hudson and Gosse. *The Rotifera, or Wheel-animalcules*; Vol. II, p. 120; pl. XXVII, fig. 8.

*Brachionus bakeri*, \* \* \* C. L. Herrick, *Bull. Sci. Lab. of Denison Univ.*, Vol. I, p. 55.

This is the commonest of our Brachionidae and it is subject to great variations, not only in appearance but also in size. Some varieties appear to be fully one-third again as large as others.

The markings upon the lorica vary in different individuals. In some cases the lorica is smooth, while in others it is more or less faceted and granulated.

The shape of the depression between the middle teeth of the cephalo-dorsad margin of the lorica also varies. In some individuals this depression is acute, while in others it is strongly convex.



This species is found in ponds containing plant life. Sessile vorticellidae are often found attached to the lorica of this species. Sometimes they are situated at the cephalad extremity of the lorica, evidently appropriating a portion of the food attracted by the cilia of the *Brachionus*; while in other cases these vorticellidae are attached to other parts of the lorica.

Sp. 25. *Brachionus militaris*, Ehrenberg.

*Brachionus militaris*, \* \* \* Hudson and Gosse, The Rotifera or Wheel-animalcules; sup., p. 52; pl. XXXIV, fig. 23.

*Brachionus militaris*, \* \* \* C. L. Herrick, Bull. Sci. Lab. of Denison Univ., Vol. I, p. 56; pl. X, fig. 10.

During mid summer this species was abundant in all of our weedy pools. It seems to be fond of wallowing in the debris that is found at the bottom of such pools.

Sp. 25. *Brachionus tuberculus*, sp. n.

[Plate I; Fig. 6.]

Lorica sub-rectangular, slightly wider than long (spines excluded), warted. The cephalo-dorsad margin is supplied with six teeth. The middle teeth are much larger than any of the others. Next in size come the lateral teeth. Between the two middle teeth there is a narrow, concave excavation. The cephalo-ventrad margin of the lorica is feebly convex. This margin is supplied with four small, sub-equal crenations. Two of these are situated, one near each lateral surface of the lorica; the remaining two are located near the meson. Between the two sub-median crenations there is a shallow concave excavation. The laterad margins of the lorica are convex. The caudad margin is straight. At its corners it is supplied with two long spines; these spines are more than half the length of the body of the lorica. The orifice for the protrusion of the foot is guarded by two small, unequal spines.

The whole lorica is densely covered with small tubercles, hence the name. These tubercles are found even upon the larger teeth of the cephalad margin and upon the spines. In a few individuals the spines appeared to be unwarted. The foot is very flexible.

During mid-summer this species was very abundant around the roots of the duckweeds (*Lemnaea polyrrhiza*, L.), of one of our larger ponds.

## FAMILY ANURAEADAÆ.

## XV. GENUS ANURAEA, Gosse, nec Ehrenberg.

Sp. 27. *Anuraea tecta*, Gosse.

*Anuraea tecta*, \* \* \* Hudson and Gosse, The Rotifera or Wheel-animalcules, Vol. II, p. 123; pl. XXIX, fig. 10.

During the latter part of summer a single individual of this species was encountered in one of our shallow, weedy ponds.

Sp. 28. *Anuraea cochlearis*, Gosse.

[Plate I; Fig. 7.]

*Anuraea cochlearis*, \* \* \* Hudson and Gosse, the Rotifera or Wheel-animalcules; Vol. II, p. 124; pl. XXIX, fig. 7.

Myriads of this species have been encountered in one of our clear ponds. Here, as in England, they are much preyed upon by *Asplanchnas*.

## PART II. CRUSTACEA.

The arrangement adopted in this portion of this paper is the same as that followed by Professor C. L. Herrick, in his "Final Report Report upon the Crustacea of Minnesota."

## ORDER CLADOCERA.

## FAMILY SIDIDAE.

## I. GENUS SIDA, Straus.

Sp. 1. *Sida crystallina*, Mueller.

*Sida crystallina*, \* \* \* C. L. Herrick, Final Report on Minnesota Crustacea, p. 20.

This beautiful species appears to be quite rare in this locality. I have seen it but once. On the 17th of April, 1891, several were found among the *Sagittaria* in one of our canal basins.

## FAMILY DAPHNIDAE.

## II. GENUS MOINA, Baird.

Sp. 2. *Moina paradoxa*, Weismann.

*Moina paradoxa*, \* \* \* C. L. Herrick, Final Report on Minnesota Crustacea, p. 34; pl. A, figs: 1, 3, 6, 7, 9.

During the latter part of summer and the early part of fall, this species was very abundant in several of the stagnant pools that



occupy the bottom lands upon either side of the Ohio River. Ehippial females appear about the middle of September.

A certain species of *Brachionus*—probably *Brachionus urceolaris*, Weismann—is often found attached to this animal.

### III. GENUS SCAPHOLEBERIS.

Sp. 3. *Scapholeberis mucronata*, Mueller.

*Scapholeberis mucronata*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 42; pl. J, fig. 5.

This species is abundant in all of our ponds.

The brood cavity usually contains two embryos, each of which is about as long as that cavity. The head of one embryo is directed caudad, while the head of the other is directed cephalad.

Ehippial females appear about the latter part of September.

### IV. GENUS SIMOCEPHALUS.

Sp. 4. *Simocephalus vetulus*, Mueller.

*Simocephalus vetulus*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 46.

This species is abundant in all of our canal basins and in many of the ponds that contain plant life. It varies in hue from almost colorless to a brick red.

### V. GENUS DAPHNIA.

Sp. 5. *Daphnia pulex*, Mueller.

*Daphnia pulex*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 56.

This species is very abundant and is found in the same situations as *Moina paradoxa*, Weismann. They are fond of foul water and a dump pond is sure to be filled with them. The body is often covered with Vorticellidae and other Infusorians.

Ehippial females appear about the middle of September.

### FAMILY LYCEIDAE.

#### SUB-FAMILY LYCEINAE.

### VI. GENUS LYNCEUS.

#### *Sub-genus Alona.*

Sp. 6. *Alona porrecta*, Birge.

*Alona porrecta*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 99.

Although not abundant, this species has been encountered several times.

Sp. 7. *Alona glacialis*, Birge.

*Alona glacialis*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 100.

This species is very scarce.

Sp. 8. *Alona intermedia*, Sars.

*Alona intermedia*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 101; pl. I, fig. 15.

*Sub-genus Pleuroxus.*

Sp. 9. *Pleuroxus denticulatus*, Birge.

*Pleuroxus denticulatus*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 110; pl. G, figs. 12, 13.

This species is abundant in all of our canal basins and in several of the larger ponds.

The number of teeth upon the caudo-ventrad angle of the shell varies from one to three.

Sp. 10. *Pleuroxus hamatus*, Birge.

*Pleuroxus hamatus*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 110; pl. II, fig. 1.

Although not widely distributed, this species is quite abundant in the few canal basins and large ponds where it does occur.

A few slight deviations from the descriptions that I have seen of this species tempt me to give a complete description. I have not seen Professor Birge's description. Shell long and low, about twice as long as high. Length about 478 micro-millimetres, height about 278 micro-millimetres. Caudad margin of shell straight, about two-thirds as high as the greatest height of the shell. Caudo-ventrad angle of shell not toothed, but is margined with minute sharp points. Ventrad margin straight or feebly concave, supplied with a fringe of long hairs. Beak curved caudad, about twice as long as the antennules, including hairs. Shell is coarsely marked with the same lines that adorn the shell of *P. denticulatus*. In addition, the whole shell is closely striated with fine, undulating, sub-parallel, longitudinal, lines. These striations extend out upon the beak. Eye larger than the pigment fleck. First foot of the female supplied with a claw. The post-abdomen is long, slender, truncated.



Its caudad border is supplied with a row of sharp teeth. The distal teeth are the longest, thence they gradually decrease in length. The terminal claw of the post abdomen is supplied with two short basal spines.

VII. GENUS CHYDORUS, Leach.

Sp. 11. *Chydorus sphaericus*, Mueller.

*Chydorus sphaericus*, \* \* \* C. L. Herrick, Final Report on  
Minn. Crustacea, p. 116, pl. F, figs. 4, 7, 8, 10.

This species is very abundant in shallow, weedy, pools.

ORDER COPEPODA.

FAMILY CALANIDAE.

VIII. GENUS DIAPTOMUS, Westwood.

Sp. 12. *Diaptomus pallidus*, Herrick.

*Diaptomus pallidus*, \* \* \* C. L. Herrick Final Report on  
Minn. Crustacea, p. 142; pl. Q, fig. 17.

This species is quite abundant in two or three of our shallow ponds. Its transparency renders its detection difficult.

IX. GENUS CYCLOPS, Mueller.

(*Antennae 17-jointed.*)

Sp. 13. *Cyclops ater*, Herrick.

*Cyclops ater*, \* \* \* C. L. Herrick. Final Report on Minn.  
Crustacea, p. 145; pl. Q2, figs. 9-12.

*Cyclops ater*, \* \* \* C. L. Herrick, Crustacea of Alabama,  
p. 14.

This species is occasionally encountered in the larger canal basins.

Sp. 14. *Cyclops viridis*, Jurine.

*Cyclops viridis*, \* \* \* C. L. Herrick, Final Report on Minn.  
Crustacea, p. 145.

This species is found in all of our waters. It is especially abundant in stagnant water. Occasionally this animal is colorless, but usually it is rendered green by myriads of green infusoria which attach themselves to its body. Occasionally species of Vorticellidae are seen attached to its body.

Sp. 15. *Cyclops parvus*, Herrick.

*Cyclops parvus*, \* \* \* C. L. Herrick, Final Report on Minn.  
Crustacea, p. 145.

This species is frequently found in our canal basins.

Sp. 16. *Cyclops tenuicornis*, Claus.

- Cyclops signatus*, \* \* \* G. S. Brady, British Copepoda, Vol. I, p. 100; pl. XVII, figs. 4-12.  
*Cyclops tenuicornis*, \* \* \* G. S. Brady, British Copepoda, Vol. I, p. 102; pl. XVIII, figs. 1-10.  
*Cyclops tenuicornis*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 153, pl. R fig. 16

This species is very abundant in many of our ponds and canal basins. Here we have two distinct varieties. In one variety the knife-edge upon the distal joint of the antennae is smooth, in the other it is toothed. This second variety might, with propriety, be divided into two sub-varieties. In one, the usual case, the teeth upon the knife-edge are small triangles; in the other they are stout hooks. The case where the teeth are small triangles corresponds to *C. signatus*, Koch.

(*Antennae 12-jointed.*)

Sp. 17. *Cyclops serrulatus*, Fischer.

- Cyclops serrulatus*, \* \* \* G. S. Brady, British Copepoda, Vol. I, p. 109; pl. XXII, figs. 1-14.  
*Cyclops serrulatus*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 157; pl. O, figs. 17-19.

This species is common in all of our weedy ponds.

Sp. 18. *Cyclops fluviatilis*, Herrick.

- Cyclops fluviatilis*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 159; pl. Q5, figs. 1-9.  
*Cyclops fluviatilis*, \* \* \* C. L. Herrick, Alabama Crustacea, p. 15.

Although not widely distributed, yet this form is very abundant in the few peaty pools where it does occur.

(*Antennae 11-jointed.*)

Sp. 19. *Cyclops phaleratus*, Koch.

- Cyclops phaleratus*, \* \* \* G. S. Brady, British Copepoda, Vol. I, p. 116; pl. XXIII, figs. 7-13.  
*Cyclops phaleratus*, \* \* \* C. L. Herrick, Final Report on Minn. Crustacea, p. 161; pl. R, figs. 6-10.

This species is rare.



(*Antennae 8-jointed.*)

Sp. 20. *Cyclops fimbriatus*, Fischer.

*Cyclops crassicornis*, \* \* \* G. S. Brady, British Copepoda,  
Vol. I, p. 118; pl. XXIII, figs. 1-6.

*Cyclops fimbriatus*, \* \* \* C. L. Herrick, Final Report on  
Minn. Crustacea, p. 162, pl. R, fig. 11.

This species is abundant in all of our pools. It varies in color from a faint pinkish hue to a brick red.

#### ORDER OSTRACODA.

#### X. GENUS CYPRIS, Mueller.

Sp. 21. *Cypris virens*, Mueller.

*Cypris virens*, \* \* \* G. S. Brady, Recent British Ostracoda,  
p. 364, pl. XXIII, figs. 23-32; pl. XXXVI, fig. 1.

*Cypris virens*, \* \* \* Brady and Norman, Ostracoda of North  
Atlantic and Northwest Europe, part I, p. 74.

*Cypris virens*, \* \* \* C. L. Herrick, Alabama Crustacea, p.  
24; pl. VI, fig. 3.

This species is abundant in our shallow, grassy ponds.

Sp. 22. *Cypris* sp (?)

[Plate II; Figs. 11-13.]

Although agreeing in many particulars with *C. virens*, Jurine, this species differs from it in the following respects:

1. The caudad half of each valve is marked with a series of concentric lines which in appearance resemble a nest of test tubes that has been bent into the shape of a retort.

2. The ventrad border of each valve is fringed with a row of tubercles. Each tubercle terminates in a hair. (Some specimens of *C. virens* are said to possess this feature.)

3. The caudad margin of the post abdomen is smooth.

During the summer this species was very abundant in several of our shallow, weedy pools. Among dozens examined no females were encountered. It will be noted that its habitat is the same as that of *C. virens*. It is possible that it is the male of that species.

Sp. 23. *Cypris herrieki*, sp. n.

[Plate II; Figs. 1-10.]

In a lateral view, the shell is sub-triangular, highest near the middle. The ventral margin is straight, excepting at its cephalad

extremity, where, after a shallow concave notch, the margin is convex. The remainder of the margin is strongly convex. From the above described ventral notch, a well defined, feebly convex, line passes dorsad to the opposite margin. That portion of the shell which lies cephalad of this line is usually curved laterad. From within the cephalad and caudad extremities of the valves numerous hairs protrude.

In a dorsal view, the shell is sub-fusiform, being widest caudad of the middle. At their caudad extremity the valves are slightly divaricated, while at their cephalad extremity they are closely approximated. The shell is covered with fine reticulations and minute hairs. In addition to these, it is marked with conspicuous dark green bands. These bands are arranged as follows: One, parallel to and almost adjacent to the mesal border of the shell, extends from the caudo-ventrad angle of the shell dorso-cephalad almost to the cephalad extremity of the valve. There it divides. One portion continues in the same course to the cephalo-ventrad extremity of the valve. The other, turning laterad, passes ventrad for a short distance and terminates in a sharp point. At the origin of this line there is a large, convex blotch, which extends ventrad a short distance. Near the centre of the figure several bands fuse in such a manner as to form a hollow, sub-square figure. From the cephalo-dorsad corner of the square a tongue passes ventro-caudad into the square. The length of this tongue and the angles it makes with the sides of the square vary slightly in different individuals. Usually it extends almost to the centre. From this same angle of the shell a band projects ectad. After passing cephalad a short distance, this band forms a convex curve and passes caudo-dorsad almost to the margin of the shell. From the caudo-dorsad angle of the square a short band passes dorso-caudad and fuses with a broader band which passes caudad, approximately parallel to the dorsal margin of the shell. From this same corner another band passes caudo ventrad almost to the caudad margin of the shell. This band is approximately parallel to the band just described. From the caudo-ventrad angle of the square a band passes caudo-ventrad almost to the caudo-ventrad extremity of the shell. In the caudad portion of its course this band curves dorsad, otherwise it is approximately parallel to the band last described. From the cephalo-ventrad angle of the square, a short band projects ventrad and then broadening, forms a boot-shape band. The short heel of this boot projects caudad and



terminates in a point, the long toe extends cephalad and terminates bluntly. From the same corner of the square, a second band projects cephalad to about the level of the toe of the boot. There it fuses with a spike-shape band which extends cephalo-ventrad from near the cephalo-dorsad angle of the square to about the cephalo-ventrad extremity of the shell. The head of the spike is at the caudo-dorsad extremity of the band. The two bands fuse near the head.

The number of lucid spots is about eight. They are situated in the centre of the valve and ordinarily are enclosed within the square above described.

The sketches of the appendages are self-explanatory. However, I will call attention to two points:

1. The brush upon the second pair of antennae does not extend quite to the distal extremity of the terminal claws of the same.
2. At the base of the distal joint of the second foot we find two claws. The caudal claw is much the larger and is bordered with a row of small teeth.

Length of shell about 3 millimetres; height about 1 millimetres. Excepting *C. perelegans*, Herrick, this is believed to be the largest member of this genus yet discovered. Its large size renders it an excellent subject for class work.

So far this species has been encountered in but one locality. In the shallow weedy tongue of one of our canal basins it is quite abundant.

#### XI. GENUS CYPRIDOPSIS, Brady.

##### Sp. 24. *Cyprodopsis vidua*, Mueller.

- Cypridopsis vidua*, \* \* \* G. S. Brady, Recent British Ostracoda, p. 375. pl. XXIV, fig. 27-36, 46.
- Cypridopsis vidua*, \* \* \* Brady and Norman, Ostracoda of the North Atlantic and Northwestern Europe, part I, p. 89.
- Cypridopsis vidua*, \* \* \* C. L. Herrick, Alabama Crustacea, p. 31; pl. IV, fig. 1.

This species is common in all our pools. *Variety Obesa* is occasionally seen.

## EXPLANATION OF PLATES.

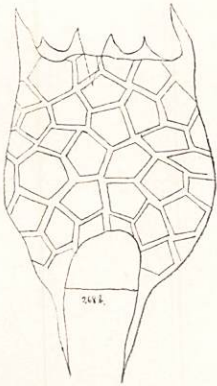
## PLATE I.

- Fig. 1. *Brachionus bakeri*. [Variety] Lorica, ventral view.  
 Fig. 2. do do Cephalo-dorsad margin of the lorica, one variety.  
 Fig. 3. *Brachionus bakeri*. Dorsal view.  
 Fig. 4. *Asplanchna cincinnatiensis*. The left focculent ribbon is not shown.  
 Fig. 6. *Brachionus tuberculus*. Lorica, ventral view.  
 Fig. 7. *Anuraea cochlearis*.  
 Fig. 8. *Metopidia elliptica*. Ventral view.  
 Fig. 9. *Metopidia dentata*. Lorica, with foot. Ventral view.  
 Fig. 10. *Monostyla quadridentata*.  
 Fig. 11. *Monostyla truncata*.  
 Fig. 12. *Cathypna leontina*. Ventral view. Lorica, with toes, trophi, and eye.

## PLATE II.

- Fig. 1. *Cypris Herricki*. *sp. n.*, lateral view.  
 Fig. 2. do do dorsal view.  
 Fig. 3. do do one of the first pair of antennae.  
 Fig. 4. do do one of the second pair of antennae.  
 Fig. 5. do do mandible.  
 Fig. 6. do do first maxilla.  
 Fig. 7. do do second maxilla.  
 Fig. 8. do do first foot.  
 Fig. 9. do do second foot.  
 Fig. 10. do do post abdomen.  
 Fig. 11. *Cypris sp. (?)* lateral view.  
 Fig. 12. do do mandible.  
 Fig. 13. do do feet.





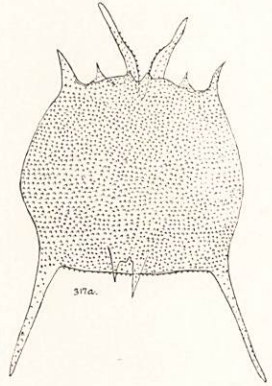
1.



2.



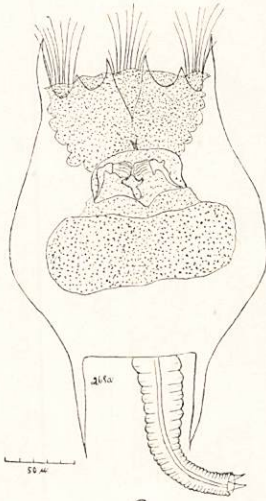
4.



6.



5.



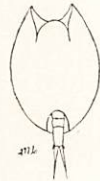
3.



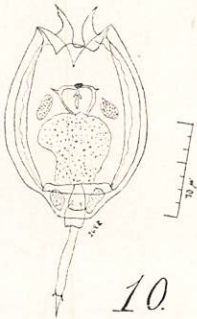
7.



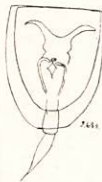
8.



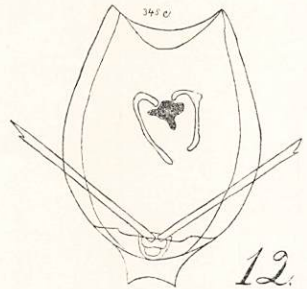
9.



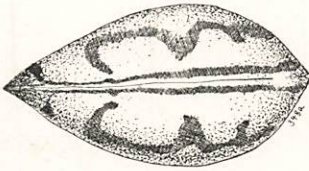
10.



11.



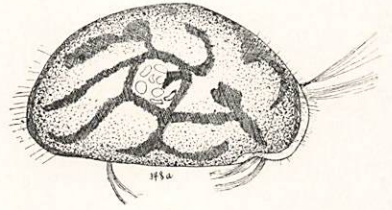
12.



1.



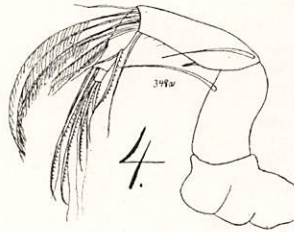
12.



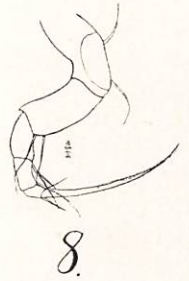
2.



7.



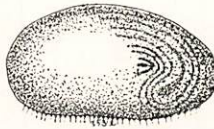
4.



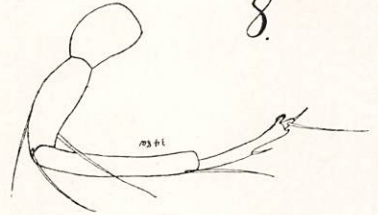
8.



13.



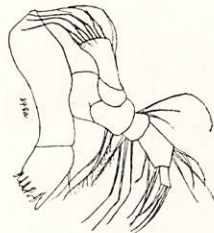
11.



9.



3.



5.



10.



6.



