Proceedings of the Iowa Academy of Science

Volume 24 | Annual Issue Article 53

1917

Observations on the Protozoa - with Descriptions and Drawings of Some Probable New Species

Clementina S. Spencer
Coe College

Let us know how access to this document benefits you

Copyright ©1917 Iowa Academy of Science, Inc.
Follow this and additional works at: https://scholarworks.uni.edu/pias

Recommended Citation
Spencer, Clementina S. (1917) "Observations on the Protozoa - with Descriptions and Drawings of Some Probable New Species," *Proceedings of the Iowa Academy of Science, 24(1),* 335-351.
Available at: https://scholarworks.uni.edu/pias/vol24/iss1/53

This Research is brought to you for free and open access by the Iowa Academy of Science at UNI ScholarWorks. It has been accepted for inclusion in Proceedings of the Iowa Academy of Science by an authorized editor of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.

OBSERVATIONS ON THE PROTOZOA.

WITH DESCRIPTIONS AND DRAWINGS OF SOME PROBABLE NEW SPECIES.

CLEMENTINA S. SPENCER.

In 1906 The Davenport Academy of Sciences published a thesis by Dr. C. H. Edmondson on the Protozoa of Iowa which is the best list, so far compiled, of the protozoa known to occur in the waters of this state. During my recent observations of these always interesting organisms I have found a number of species which may be considered an addition to Edmondson's list, including some forms which further observation may prove to be new. With the list of these are included some notes on more common forms which may be of interest to students of protozoology.

The classification which I follow is that of Professor Calkins in his Protozoology (1909), with the exception of a single group which follows the Euglenoidina of Ohio, by Professor L. B. Walton (1915). Those species marked with an asterisk are an addition to Edmondson's list, while those unmarked are included for other reasons. Unless specified, the forms were all found near the State University of Iowa during the year 1915-1916.

Subphylum **SARCODINA**

Class I **Rhizopoda**

Subclass PROTEOMYXA

Vampyrella spirogyrae Cienk. 1 and 2, figure 53.

Body nearly globular, pseudopodia raylike, moving with the amoeboid motion of the hyaline periphery. Endoplasm densely and brilliantly orange red, finely granular with a few darker pigment(?) granules. Within a few moments the animal changes from having nearly all capitate pseudopodia to nearly all simple rays. Capitate pseudopodia are shot in and out very rapidly. Both kinds may be withdrawn from a considerable portion of the periphery and short amoeboid lobes occasionally appear. Nucleus and vacuoles not visible. Motion a swimming glide. Diameter of body in red specimen 4 microns.

Formerly this organism was classified with the Heliozoa, but both Calkins and Doflein now place it in the Proteomyxa on the

Proceedings of the Iowa Academy of Science, Vol. 24 [1917], No. 1, Art. 53

basis of miscible and anastomosing pseudopodia. However, neither of the specimens under my observation exhibited this character. The first one found was the typical brilliant orange red, as described by Leidy, extremely small and active. With

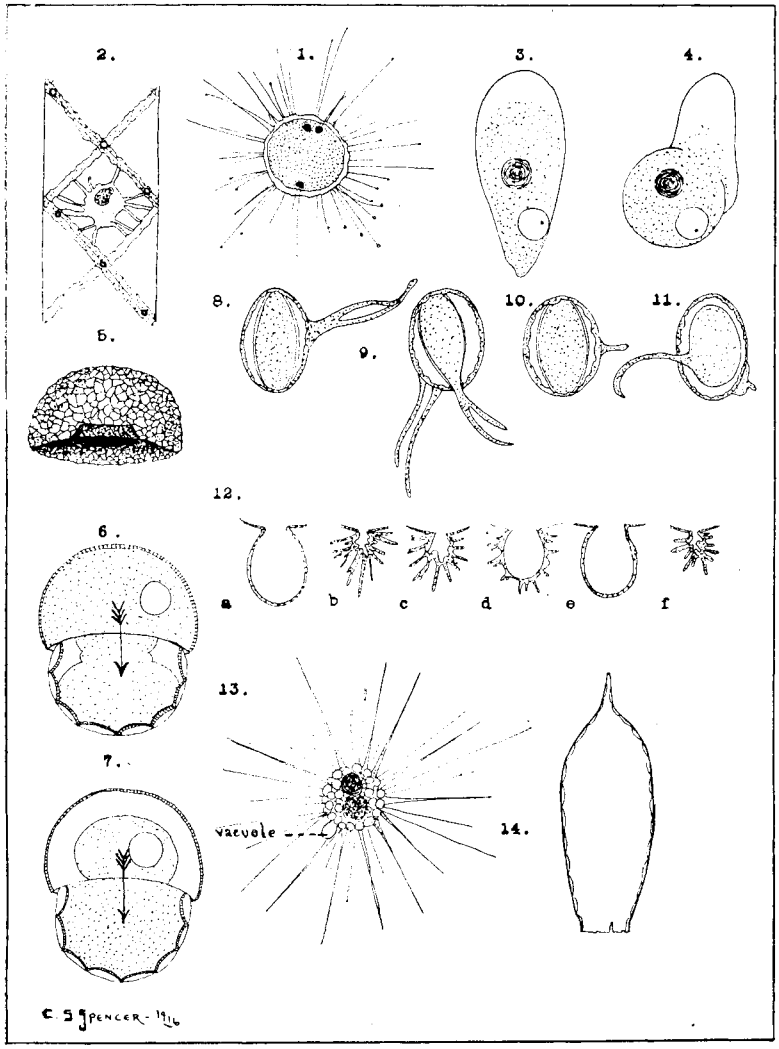

FIGURE 53

a thread siphon it was kept moist and under observation for a day, but its minute size precluded its transfer to another slide, and when its travels during the night took it under a pile of debris it was hopelessly lost. The second specimen was clear

https://scholarworks.uni.edu/pias/vol24/iss1/53

Spencer: Observations on the Protozoa - with Descriptions and Drawings of

and colorless, and established within an algal filament. Edmondson reports having seen *Lampyrella* but once, and then only in a dark granular phase. His specimen assumed the interesting flagellated stage, which mine did not.

Subclass AMOEBEA.

**Hyalodiscus limax* (Duj.) 3 and 4, figure 53.

Body oval or disc-shaped. Progression snail-like with a broad, clear anterior region and very little change occurring in outline. Ectosare relatively extensive. Nucleus visible without reagents. Size 44 microns.

So far as I have able to ascertain, this amoeba has not previously been recorded in Iowa. Whether this indicates its rarity or a rather prevalent skepticism as to its being a distinct species I cannot say. I have never seen other amoebæ so active as these are while they retained such regular outline. They were obtained in small numbers in December from under an inch of ice in an old stone quarry pond near the University. An interesting point was the presence of a minute, black, dancing organism in the contractile vacuole of one specimen (see figure).

**Difflugia* species. 5, figure 53.

Shell hemispherical, proportions like *Arcella* but structure like *Difflugia*. An inverted rim within the mouth as is often seen in *Arcella*. Color white. Diameter 70 microns.

Only one dead shell of this form was found. It does not correspond to any species described by the authors in my bibliography. However, *Difflugia* is now believed to be extremely variable within its species, and this is probably nothing new.

Arcella vulgaris Ehr. 6 and 7, figure 53.

Observation of even this most common of all rhizopods may occasionally be rewarded by a glimpse of something a little out of the ordinary. In October, in an old jar in the laboratory there suddenly appeared countless numbers of active, minute and colorless individuals. Figures 6 and 7 show a case of supposed conjugation of two of these young shells, *a smooth and a pitted variety*. Since the two shells were not actually seen to approach each other and fuse there is of course a possibility that the process was division. Many writers record the union of two or more rhizopods, but remark upon the rarity of seeing

Published by UNI ScholarWorks, 1917

an actual approach and fusion. In either event, the case in question is of interest since it emphasizes the fact that the smooth and pitted shells of *Arcella* are merely varieties of the same species. The interchange of protoplasm between the shells was active, the direction of flow reversing seven times in eight minutes. Height of one shell 44 microns.

*Unknown rhizopod. 8 to 11, figure 53.

A single specimen of this large and sluggish rhizopod was under observation an entire afternoon, but its unusual transparency and a cloudy day combined against the observer. When it was revolved, the body was seen to be shaped like a football with a few long, firm pseudopodia, the periphery and center being finely granular with a space or clear plasm lying between. No mouth, nucleus, or vacuole were apparent, and when electric light was finally thrown in it was fatal to the specimen. Size 200 microns.

**Euglypha mucronata* Leidy. 14, figure 53.

Shell cylindrical, tapering toward the mouth, transparent, composed of circular imbricating plates which later become almost homogeneous. Pseudopodia delicate and geniculate. This form is similar to the common *Euglypha alveolata* Duj., but with the fundus prolonged into an acute tip.

Class II **Actinopoda**

Actinophrys sol Ehr. 12 and 13, figure 53.

This is another form almost too common to mention except when especially favorable conditions bring out some interesting phase or mechanism. The contractile vacuole in this species is a permanently thin place in the peripheral plasm or membrane which upon collapse falls into folds and gives the appearance of a tuft of hairs. Figure 12 shows the stages of slow refilling and sudden collapse. Average time of action forty seconds. x1000.

**Nuclearia delicatula* Cienk. 15 to 22, figure 54.

Body both amoeboid and heliozoan-like, with pseudopodia in turn amoeboid, short and spicule-like, long and raylike, delicate and intricately branched, capitate (rarely) but not suctorial, stocky for attachment, and anastomosing in at least one instance under observation. Length of body 20 to 160 microns. Maximum extent of pseudopodia 315 microns.

Spencer: Observations on the Protozoa - with Descriptions and Drawings of

This most interesting and problematic species has been taken regularly in large numbers from gold fish tanks about town. Given moderate warmth and quiet the individuals rapidly in-

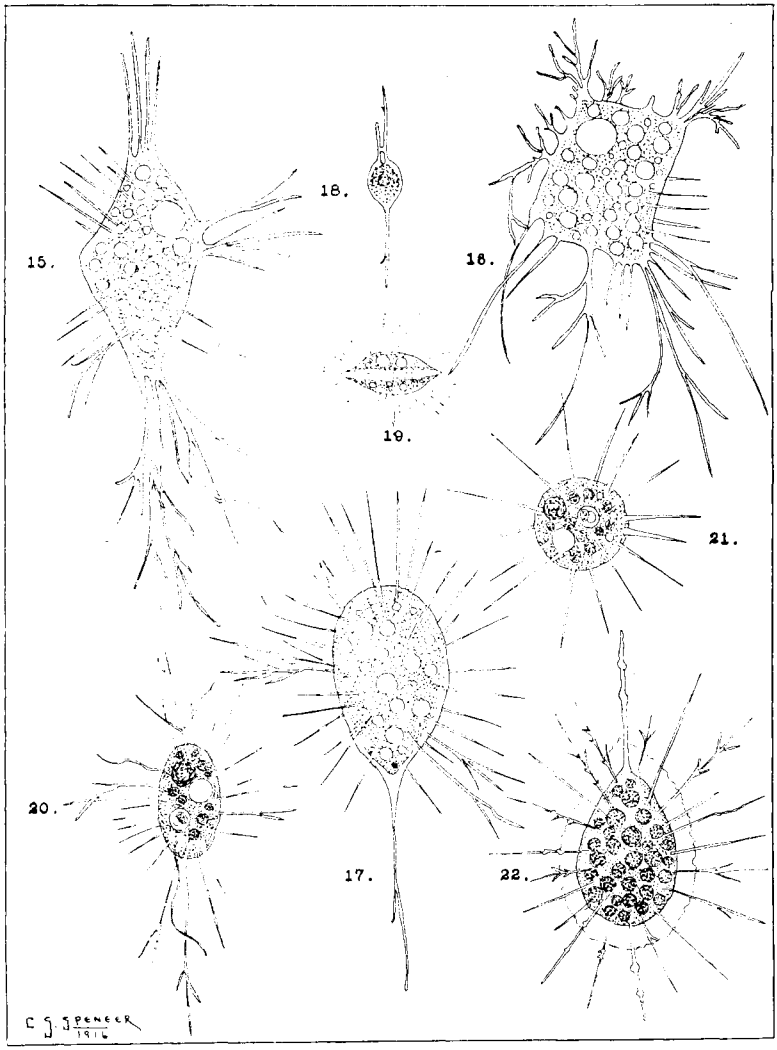

FIGURE 54

crease in size and numbers for a few weeks, when they die off and a new culture must be started. In a sluggish condition the animal resembles *Actinophrys sol*, or it may at times withdraw nearly all of its rays; but in active state it becomes the

Published by UNI ScholarWorks, 1917

most variable amoeboid form within my knowledge. During two months observation these abundant animals were a most interesting study and their phases filled many drawing plates. A nucleus could not definitely be made out, though many reagents, including osmic acid, were tried. At no time was a contractile vacuole seen, nor were the animals seen to divide. Figure 22 shows an individual which I regard as the same species, but which has a gelatinous covering like *Heterophrys*. Conn, in his Protozoa of Connecticut, also records *Nuclearia* with a gelatinous envelope.

Professor Calkins who kindly confirmed my identification of this species says: "From your sketches I have no hesitation in saying that your organism is one of the questionable heliozoa most closely related to *Actinophrys*, and you are right in identifying it as *Nuclearia delicatula* Cienk." In Calkin's Protozoology (1909) he places *Nuclearia* with *Vampyrella* in the Proteomyxa on the basis of its amoeboid character and the rare anastomosis of pseudopodia. Edmondson does not record the genus.

Subphylum **MASTIGOPHORA**

Class I **Zoomastigophora**

Subclass FLAGELLIDIA.

**Oikomonas* species 1. 25, figure 55.

Minute, plastic, sometimes attached by a temporary posterior prolongation. Flagellum single with a fissure at the base. Body oval, not compressed, crenulated in optical section, with a minute posterior tip. Flagellum vibratile. Vacuole large, anterior. Nucleus posterior. Found in old infusions in the laboratory. Uncommon. Length of body 19 microns, flagellum 20 microns.

**Oikomonas* species 2. 26, figure 55.

Similar to the preceding, but lacking crenulations and posterior tip. Flagellum longer, vacuole and nucleus not visible. Transparent. Abundant in gold fish tanks with *Nuclearia*. Body length 20 microns.

**Rhipidodendron splendidum* Stein. 23 and 24, figure 55.

Monads ovate, similar to *Anthophysa*, living in a social zoöthecium, a rust brown "flabellate or dendriform aggregation of closely approximated tubules," the distal ends of which are each inhabited by a single zoöid. Only a large number of dead

Spencer: Observations on the Protozoa - with Descriptions and Drawings of

fragments of these zoöthecia were found in a small pond, but these were sufficient to identify the beautiful flabellate colony figured by Kent in his Plate XVI. As the tubules were never

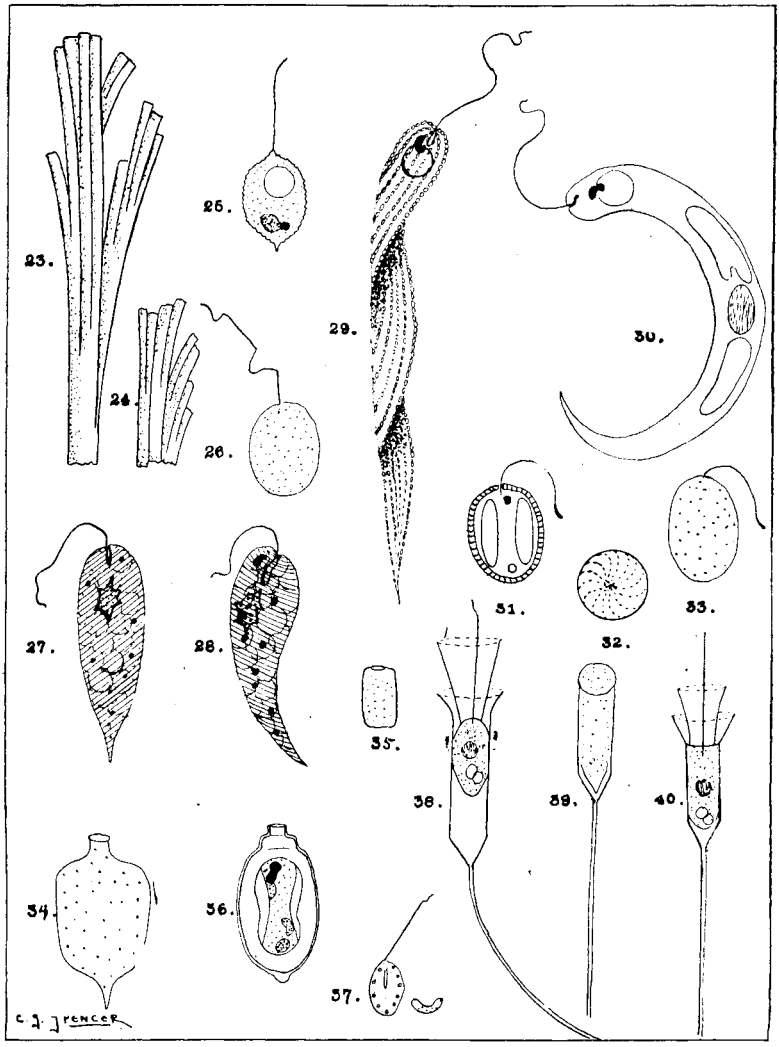

FIGURE 55

found growing in more than one layer the species *huxleyi* was ruled out. Maximum length of fragments found 100 microns. Diameter of tubule .8 micron.

Published by UNI ScholarWorks, 1917

Proceedings of the Iowa Academy of Science, Vol. 24 [1917], No. 1, Art. 53

**Euglena rubra* Hardy. 27 and 28, figure 55.

Body large, cylindrical, anterior end rounded. Posterior end with short acute tip. Periplast finely spirally striated without punctuations. Color densely bright red. Length of body 115 to 230 microns.

I am indebted to Professor R. B. Wylie for bringing these specimens in formalin from Little Spirit Lake in August where they were abundant. This is not strictly an Iowa record, as the lake is across the Minnesota border line; but it is very likely that the species may be found in this state and the record is of interest. Walton regards this species as distinct from *E. sanguinea.*

**Euglena* new species. 29 and 30, figure 55.

Body elongated, ribbon-like, habitually twisted into three areas. Conspicuously beaded in *longitudinal* rows, of which there are seven at the anterior end and only five at the posterior. Flagellum about half as long as the body. Nucleus oval, central, with a larger flattened paramylon body before and behind. Vacuole reservoir very large and circular, posterior to the large stigma. Cytopharynx plainly visible. Solitary. Color dense bright green, somewhat clearer at the tail. Size 190 microns.

This remarkable form was found in a vial of water from Fairport, Iowa, which had been standing in my laboratory for some weeks. It was large and active, apparently cramped for space under the cover glass. It would attach the tail to the slide and give the long body a twisted motion in a semicircle. The body was not strongly metabolic, but the raised beaded lines on the periplast were seen to move forward on one side and at the same time backward on the other. Professor Walton, probably the foremost authority on the Euglenoidina, was kind enough to examine these drawings and notes, and writes: "The probabilities are that a new form is represented."

**Trachelomonas oblonga punctuata* Lemm. 31 to 33, figure 55.

Shell oval, brown, dotted with punctæ which show a spiral arrangement from the aboral end, but which from the side appear to be irregularly scattered. In optical section the shell appears to be made up of small sections or to have pores (see figure). Stigma present; chloroleucites two, elongate; flagellum nearly as long as the body and thickened at the tip. Size 23 microns.

https://scholarworks.uni.edu/pias/vol24/iss1/53

Spencer: Observations on the Protozoa - with Descriptions and Drawings of

The spiral arrangement of the punctæ at the aboral end seems to have been overlooked in Lemmerman's account of this form. It is a point which is not brought out except when the active little creature is spinning on its head.

**Trachelomonas urceolatus* Stokes. 34, figure 55.

Shell large, light brown, sparsely dotted. Neck obliquely truncate, a tail-like point at the aboral end, into which the cavity of the shell extends. Only dead shells were found.

**Trachelomonas* species? 35, figure 55.

Shell regularly cylindrical rather than oval, without collar or posterior spike. Surface smooth, brown. Length 14 microns.

As this shell does not conform to any description and was empty when found it can be placed in this group only tentatively.

Trachelomonas (new species?) From Arkansas. 36, figure 55.

From the *Trachelomonas teres* group. Shell brown, oval, with a conspicuous collar flaring at its base and a short rounded posterior appendage into which the cavity of the shell does not extend. Endoplasm green; stigma large. Length 22.8 microns.

The single specimen of this Arkansas form which was found was in an encysted state and lacked a flagellum. The oval protoplasmic body was somewhat constricted at the equator and had a thin layer of colorless ectoplasm over the green endoplasm. Three irregular granules (paramylon?) were present. It is the opinion of Professor Walton that a new form may be represented here, and it is hoped that additional specimens can be obtained later.

**Phacus triqueter* (Ehr.) Not figured.

Much like the common *P. pleuronectes* but having a sharp keel extending down the center of the dorsal side, and the ventral surface deeply concave. Edmondson does not record this form, but in my experience it has been more common than *pleuronectes*.

**Notosolenus orbicularis* Stokes. 37, figure 55.

Anterior flagellum one and one-half times the length of the body, carried obliquely to the right. Secondary flagellum ventral, appearing as a small longitudinal line through the body. Endoplasm colorless, a circle of minute granules around the periphery. Dorsal concavity conspicuous and deep. Not abun-

Published by UNI ScholarWorks, 1917

Proceedings of the Iowa Academy of Science, Vol. 24 [1917], No. 1, Art. 53

dant. Body length 13 microns, anterior flagellum 20 microns. (The species is separated from *N. opocamptus* Stokes by the relatively greater width of the dorsal concavity.)

Subclass CHOANOFLAGELLATA.

**Diplosiga* species. 38, 39 and 40, figure 55.

A minute, delicate, stalked form, having an elongate, parallel-sided lorica whose base is drawn into a point and whose distal end flares into a collar with a second less flaring collar within. Flagellum single; body not filling the proximal end of the lorica. Nucleus central; two posterior vacuoles. Stalk 34 microns; lorica from base to top of outer collar 35 microns; flagellum 30 microns.

At no time was the flagellum in this species seen to wave, although other signs of life were manifested in the vacuoles and in an amoeboid motion within the shell. In one specimen the protoplasm rose to the top of the lorica, was protruded in a shapeless mass and then retracted. The dotted lines in the drawings indicate the probable limits of the concentric collars, which were however too delicate to be defined in any way. Professor Calkins after seeing the drawings has placed the form in the genus *Diplosiga*. The forms were found rather rarely in the goldfish tank which yielded the supply of *Nuclearia*.

Class II **Phytomastigophora**

Subclass PHYTOFLAGELLATA.

**Mallomonas fresenii* S. K. 41 and 42, figure 56.

Yellow-green chromatophores. Flagellum long, single. Shell oval, of glassy imbricating circular plates bearing setose spines, or setæ. Setæ not more than thirty, immovable, curved. Motion rapid. Shell without spines 25 microns.

Only a few specimens of this rare form were found in water sent from Fairport, Iowa. The addition of dilute chlorotone to the water caused a sudden expulsion of protoplasm from the shell, which demonstrated that the spines belonged to the shell proper and not to its contents (see figure 42). Edmondson records finding a *Mallomonas* which he considers to be the species *ploslii*, although he was not able to make out the structure of its shell.

https://scholarworks.uni.edu/pias/vol24/iss1/53

Spencer: Observations on the Protozoa - with Descriptions and Drawings of

**Synura uvella* Ehr. 43, figure 56.

Spherical rosettes of about fifty individuals, each bearing two unequal flagella. Two olive-brown, bandlike chromatophores.

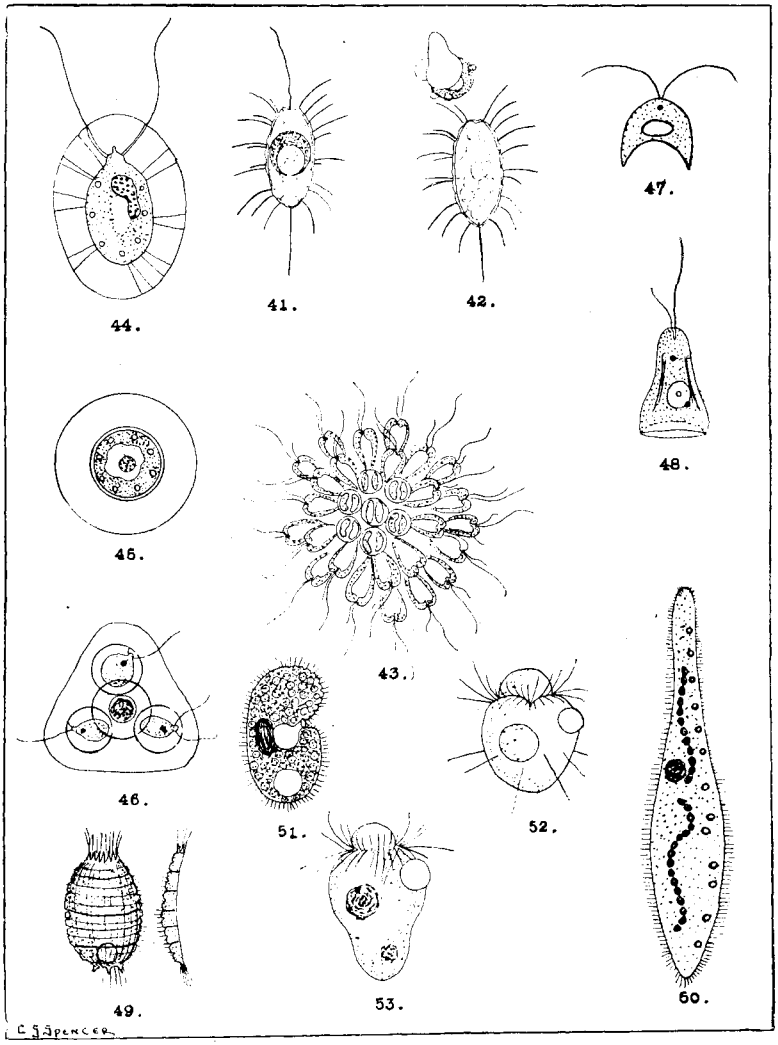

FIGURE 56

Vacuoles numerous. Colony 76 microns in diameter; maximum zoöid 15 microns.

Found late in March at the edge of a melting ice pond in the city park. This plantlike colony is said to be a source of offensive tastes and odors in drinking water.

Published by UNI ScholarWorks, 1917

Proceedings of the Iowa Academy of Science, Vol. 24 [1917], No. 1, Art. 53

**Haematococcus lacustris* Girod. 44 to 46, figure 56.

Body held by delicate threads in a large lorica. Chromatophores green, often wholly or partly red. Stigma present, flagella two. Nucleus central, irregular. In the free swimming stage the body is pyriform, with a rather pointed anterior end. Chromatophores rounded and numerous. Cyst or shell oval in free swimming stage, spherical in resting phase. Proximal ends of flagella stout. Size 30 to 45 microns.

In the late autumn these forms were discovered in an old geode in a city garden. Most of the cells were in a resting stage, and all were more or less red. A culture was brought into the laboratory and various conditions of warmth, light, and fresh rain water were supplied in the effort to force activity; but it was toward the end of a cold May before the encysted forms revived out of doors, and those indoors never revived. Binary fission and multiple division within the cyst were observed in the spring. At this time the red color was much reduced and it was possible to see definite stigmata. The red color of the protoplasm is due to the change in color of the chloroleucites, and is not concerned with the stigmata. This form is claimed by both botanists and zoologists.

*Two unknown chlorophyl—and stigma—bearing flagellates.

47, *figure 56.*

A minute free swimming form, not metabolic while under observation, yet delicate and plastic in appearance. Color very faint light greenish blue. One large anterior median stigma, and two equal divergent flagella longer than the body. Posterior part of the body drawn out into two short tail-like processes. A large clear central body of undetermined nature. Length of body 15 microns.

Professor Walton says of this: "This is something quite new to me. I wish very much that I could examine a living specimen, undoubtedly an impossibility unless you obtained a culture. I suspect it may belong to the order Chrysomonadineæ."

48, *figure 56.*

Body pear or bell shaped, apparently enclosed by a firm, clear pellicle or lorica. The posterior end is either concave or has a clear space between the endoplasm and the pellicle, giving the effect of a concavity. Endoplasm clear bright green

https://scholarworks.uni.edu/pias/vol24/iss1/53

Spencer: Observations on the Protozoa - with Descriptions and Drawings of

throughout. Pharynx and stigma present. Two pairs of longitudinal folds or striations in the pellicle. Flagella unequal, one as long as the body, the other about half as long, both being directed in advance. A conspicuous dense disc (or sphere) near the center of the body, with two small irregular granules, one apparently within and the other close beside the disc (paramylon and pyrenoids?). Not metabolic. Motion a rapid forward spiral. Length of bell without flagella 28 microns.

Professor Walton says of this: "An extremely interesting form. If you can find the number of chloroleucites and be sure that the flagella are always of unequal length, I am inclined to think it may prove to be something quite new." Unfortunately I have never found but one specimen.

Subphylum **INFUSORIA**

Class I **Ciliata**

Coleps hirtus Ehr. 49, figure 56.

This form is too common to need description here. The figure is that of a peculiarly flattened individual which appeared normal from the broad view. It was active and normal in its actions. In spite of its "armor plates" *Coleps* appears to be an easy prey to the impaling spines of the Heliozoa, and I have found one side of the little infusorian being digested and absorbed by *Actinophrys* while the outer side continued its customary activities of waving cilia. Reagents of any kind are apt to cause *Coleps* to disintegrate almost instantly, suggesting that the armor plates are not hard or dense. On the other hand the voracious mouth, which seems at once to bore, to tug, and to suck, sometimes provides a way of escape from other enemies. In one case the digestive processes of a *Stentor* were not so rapid as the means an ingested *Coleps* applied to its own rescue. It was an amusing sight to see the tiny *Coleps* bore its way to freedom through the ectoplasm of its captor.

**Chenia* species. 50, figure 56.

Elongate, contractile, uniformly ciliated, with longer anterior cilia. Mouth terminal, usually closed (not made out in this specimen). Nucleus moniliform. A row of fourteen vacuoles placed longitudinally. Size 200 microns. Found with decaying vegetation. But one specimen was found, which disintegrated with the application of osmic acid.

Published by UNI ScholarWorks, 1917

**Colpoda cucullus* Ehr. 51, figure 56.

Shape reniform, compressed laterally. Mouth ventral in a deep depression, the animal, however, frequently swimming on its side with the mouth on the right margin. Pharynx dilated at the lower end into a globular pit. Surface deeply grooved, the lines following the curved outline of the body until they reach the anterior end where they form crenulations on the right lateral margin anterior to the mouth. Nucleus central, beside the dilated end of the pharynx. Vacuole posterior. Endoplasm packed with dense granules. Common in ponds. Length 60 microns.

**Strombidium* species. 52 and 53, figure 56.

This genus is described as like *Halteria* but without the jumping bristles, and having the anterior portion protrusible. A large culture was obtained from pond water in which the form figured in 53 was common. There were, however, one or two specimens found which had a circlet of long weak hairs, occupying the position of the jumping bristles of *Halteria*. However, the much greater size, the plastic body, protrusible anterior portion, swollen lateral vacuole, and absence of springing motion, seem sufficient for taking both these forms from the genus *Halteria*. They were found associated with *Stentor* but did not long survive laboratory conditions. Size 60 to 80 microns.

Subclass SUCTORIA.

**Podophrya maupasii* Butschli. 54 and 55, figure 57.

Pedicel cylindrical, rather thick, slightly curved, enlarging at the summit. Body subspherical or club shaped, concave at the base for insertion of stalk. About twelve heavy tentacles slightly longer than the body, not conspicuously capitate. (Funnel shaped and not exceeding the diameter of the body, according to the *Monographique sur le groupe des Infusoires Tentaculiferes* of Sand.) Cytoplasm bluish gray, nucleus central; vacuoles two. Length 42 microns. Found in goldfish tank in winter.

**Podophrya libera* Perty. 56, figure 57.

Only the characteristic annulated cyst of this species was found in some pond water, and as it did not revive there is a question involved in the identification. My opinion is that it is

Spencer: Observations on the Protozoa - with Descriptions and Drawings of

P. libera as figured by Butschli on Plate 76 of Bronn's ***Klassen und Ordnungen des Tierreichs.*** The cyst of the more common *P. fixa* is nowhere described as presenting so many annulations.

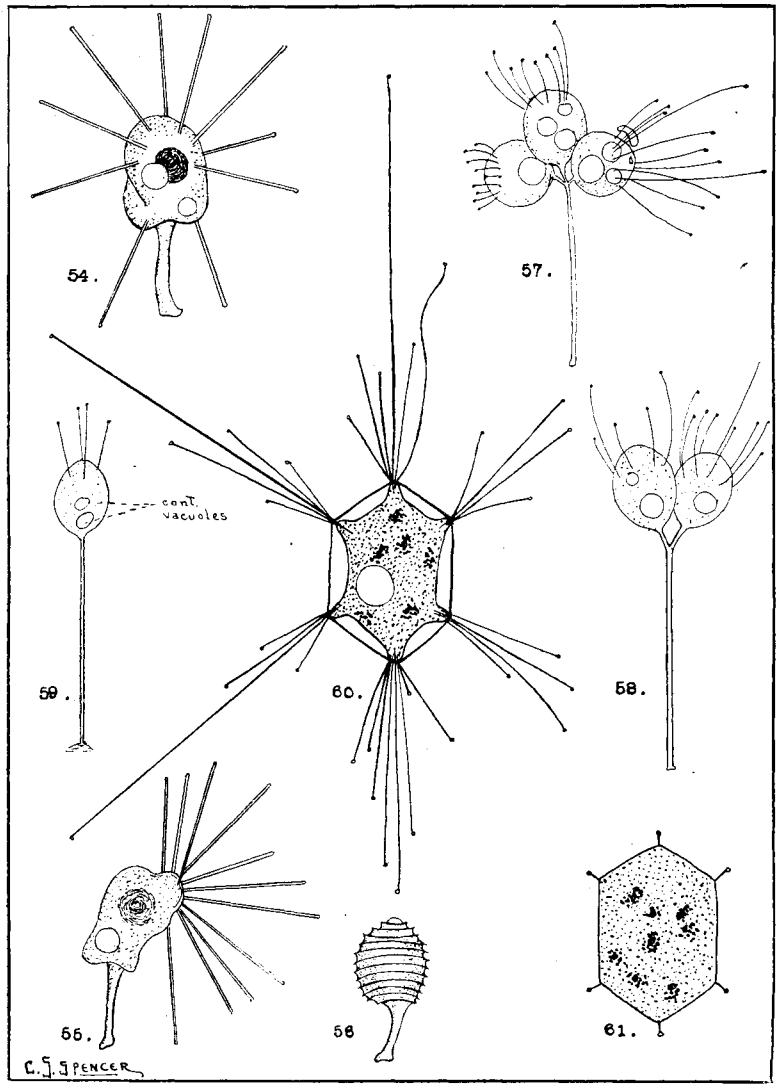

FIGURE 57

**Tokophrya* species 1. 57 and 58, figure 57.

With the characters of the genus. Extremely minute subglobular forms borne in clusters on a slender rigid stalk whose

Published by UNI ScholarWorks, 1917

length is two or three times the diameter of the body. Endoplasm colorless, much vacuolated, nucleus not visible without reagents. Tentacles borne in a circlet near the distal end, sometimes extending to a length of twice the body diameter. Body 4 microns.

Myriads of these suctorians were found in the city park during November, and again in April with dimensions twice as great. The spring specimens were slightly elongated and not so numerous. Sand does not give any figures or descriptions agreeing with this form, the most nearly approximate being *T. francottei* Sand.

**Tokophrya* species 2. 59, figure 57.

Body subpyriform, solitary, on delicate stalk more than twice the body length. Endoplasm colorless with a few granules and two posterior vacuoles. Tentacles cylindrical, straight, capitate, as long as the body, borne near the crown, and equidistant from each other. Number of tentacles as observed in the only specimen under observation, four. Total length 37 microns. Found in the gold fish tank with *Nuclearia*.

This is another species which does not correspond with any available description, the most closely approximate being *T. francottei*. As these two unknown *Tokophryas* were found under entirely different conditions, as they have a different number of tentacles, and as one is solitary while the others found in large numbers were never solitary, it seems reasonable to suppose them to be distinct.

**Metacineta* new species. 60 and 61, figure 57.

Body incompletely filling a flattened hexagonal lorica, with a fascicle of tentacles issuing from each angle. One main tentacle of each group has an axial rod running some distance into the finely granular endoplasm. Nuclear material(?) scattered in irregular granules. Vacuole very large. No apparent aperture to lorica other than the perforations for tentacles. Lorica 50x61 microns. Average tentacle 30 microns. Maximum tentacle 133 microns.

This remarkable suctorian was found early in the fall in company with a great many heliozoa in an infusion of pond water with many half decayed leaves. When it first came under my notice there was a violent commotion in its vicinity owing to the fact that two or three of its long tentacles had pierced a

Spencer: Observations on the Protozoa - with Descriptions and Drawings of

stylonichian longer than its own body. Despite most vigorous efforts the stylonichian was held fast, and impaled by more tentacles until in a short time two whole fascicles were imbedded to their bases in the victim's body, the flow of protoplasm being plainly seen through the tentacles. With a thread siphon this slide was kept moist and under observation for twelve hours. At no time did the body of the suctorian move (in fact it was so large it had little room under the cover glass) but the free tentacles were shot in and out with rapidity. The central tentacle of each group was less mobile and only gradually increased its length. Seldom did the tentacles curve. The victim, however, kept up a frantic struggle for perhaps two hours, and a continuous oscillation of the cilia and styles for six or eight hours more. About nine P. M. the almost empty cuticulum was abandoned and the suctorian, apparently too well gorged to accomodate even the vacuole, had withdrawn all save the stub of the central tentacles (see 61, figure 57). It was now impossible to distinguish any space between lorica and contents. No nucleus was visible, but the scattered fragments which seemed to resemble unclear material were interpreted as an indication of a possible spore forming stage. Hoping to be able to establish the life history of this remarkable new carnivore I prepared a thread and feeding reservoir for the night; but the night watchman closed the crack at my window, the room became overheated, and the slide dried up. I have not been so fortunate as to find another specimen.

The species which most nearly approaches this form is *Metacineta mysticina* Ehr. as figured by Butschli (Plates 7 and 8). *Metacineta mysticina*, however, has a stalk with the lorica opening at the top like a long stemmed vase. Careful focusing upon this specimen did not bring out either aperture or trace of a broken stalk. It does not seem at all likely that they can be the same.

Department of Zoology,
Coe College

Published by UNI ScholarWorks, 1917