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Note.

BY THE EDITOR.

A change in the style of the *Bulletin* being at this time unavoidable, we deem it best to make Volume 1 a little shorter than was our intention, and to begin, with Number 8, a new volume.

The numbers will be counted as a single continuous series, but the paging will begin anew with each volume. References may thus be conveniently made either to the Number of the *Bulletin* or to the Volume and page.

The title-page, table of contents, and index of Volume 1 will be issued with Number 9.

As it has become imperative that the *Bulletin* be, in part, self-supporting, the following prices, which include postage and supersede any that may have been previously given, will henceforth be asked for the several numbers to date: No. 1, 10c.; No. 2, 30c.; No. 3, 10c.; No. 4, 10c.; No. 5, 20c.; No. 6, 10c.; No. 7, 15c.; No. 8, 15c.

large flocks of these ravens wintering in the belt of Black Jack timber north of the Cimarron (Red Fork river,) south of the town of Kiowa, apparently subsisting on the very abundant acorns.

These handsome and very interesting birds have about disappeared with the buffalo, as have several other forms of animal life once very common on the plains.

From an examination of the specimens in the Goss Ornithological Collection in the State House, I am inclined to think our "Buffalo Raven," as it was called by the plainsmen, is the "White-necked Raven" of ornithologists, so named from the feathers of the neck being light-colored at the base, though externally black and glossy.

First Contribution to a Knowledge of the Lower Invertebrata of Kansas.

By F. W. CRAGIN, Sc. B.

PROTOZOA.

RHIZOPODA.

Amoeba proteus, Roesel.—Springy draw of Shunganunga creek, Shawnee county. Abundant.

Amoeba radiosa, Ehrenberg.—Shunganunga creek. Not yet abundantly found.

Pelomyxa villosa, Wallich.—Shunganunga creek. Some collections yielded the species in great abundance.

Diffugia globulosa, Dujardin.—Shunganunga creek; not rare, but less common than *D. pyriformis*.

Diffugia pyriformis, Perty.—Shunganunga creek and branches. Both the typical form and variety *compressa* are abundant, but the latter especially so. Both varieties are very variable as to size.

Diffugia urceolata, Carter.—Shunganunga creek. I have seen only the variety shown in fig. 7, Pl. XI., of Leidy's Fresh-water Rhizopods of North America.

Diffugia acuminata, Leclerc.—Shunganunga creek. Typical.

Diffugia lobostoma, Leidy.—Shunganunga creek.

Diffugia spiralis, Ehrenb.—Shunganunga creek.

Arcella discoides, Ehrenb.—Shunganunga creek. Common.

INFUSORIA.

Euglena viridis, Ehrenberg.—Spring-fed pool of Shunganunga creek, Shawnee county, among algæ. Exceedingly abundant. Variety *hyalina* also occurred with the green variety, but rarely. Variety

sanguinea was found by the writer in large bright red patches on recently exposed mud along the margin of a stream in Wabaunsee county several summers since, and identified by Rev. Francis Wolle of Bethlehem, Pa.

***Uvella virescens*, Ehr. (?)**—Common amongst the brown algaë developing in jars of water from Shunganunga creek; autumn.

***Paramoecium aurelium*, Muell.**—Spring pool from Shunganunga creek. Abundant.

***Parablaste*, gen. nov.**—Body asymmetrical, sessile by the obliquely turned and narrowed base; oral and cuticular cilia alike, the latter short and covering the entire body; mouth terminal or nearly so, with a projecting lip; nucleus inconspicuous; two contractile vacuoles, remote from the base.

To the above characters may be added the following, for the species:

***Parablaste clavata*, sp. nov.**—(Plate 9, figs. 6 and 7.] Body elongate, clavate; axis of base oblique to that of the main part of the body in extension, making, in contraction, a still greater angle [about eighty degrees] with it and at the same time becoming reduced to one-half the length, while correspondingly increased in thickness [save in the basal tenth or twelfth part]; cilia short, uniform; contractile vacuoles rounded; body granular, the base free from granules and clear, the change from granular to clear being gradual.

Length .0015 in.

On objects in muddy water from a draw of the Shunganunga drainage. May.

***Coleps amphacanthus*, Ehr.**—Shunganunga spring pool.

***Stentor Barrettii*, Barrett.**—On fresh-water polyzoa in Shunganunga creek.

***Stentor cœruleus*, (?)**—The species here provisionally referred differs from Kent's description in possessing a posterior tuft of setæ, but not otherwise, so far as observed. Shunganunga creek. Common.

***Rhabdostyla naidetes*, sp. nov.**—Zooids elongate, conic in the extended state and two and a half to three times as long as broad, conic-pyriform or produced ovate when contracted, and showing but a single basal fold, pedicle extremely short, one-twentieth to one-fifteenth as long as the extended body, the latter about three times as long as its greatest breadth and narrowed for a short distance above the pedicle; cuticular surface smooth; contractile vacuole single, large, occupying about half the breadth of the body, and distally placed (partly within the peristomal constriction in the extended zooid); nucleus narrowly oval-reniform, centro-lateral, the finely granular plasma inclosing a considerable number of rather large unequal granular bodies; ciliary disc raised above the deeply constricted border of the peristome; ciliary wreath formed of two circlets of cilia, the outer horizontally, the inner obliquely disposed.

Length, .0045 in.

Habitat. On the sides of *Dero*, just in advance of the caudal pavilion.

From its nearest ally, *R. brevipes*, C. & L., found on aquatic insects, it is readily distinguished by the single basal fold and by its form, which, in the contracted state, always presents a much more flowing outline.

I have as yet seen this infusorian only from Shunganunga creek, in Shawnee county; but it will doubtless occur wherever its host may be found. I have usually observed from two or three to perhaps a dozen on a single worm.

It is not easily dislodged, however narrow be the passage through which the naid is crawling, as at such a time it is pressed into the soft sides of its host, forming, as it were, a part of the latter.

Broad forms with two (right and left) nuclei were seen, indicating reproduction by longitudinal fission.

The species exhibits three states of contraction: one non-telescopic, elongate pyriform, or elongate ovate, with an anterior peristomal nipple-like protrusion; one similar, but with the anterior end evenly limited; and finally the telescopic state of contraction, in which the mass of the body is somewhat more shortened.

Vorticella cucullus, From.—Spring-fed pool in the bed of Shunganunga creek.

Vorticella procumbens, From.—Spring pool in bed of the Shunganunga.

Stylonichia pustulata, Ehr.—Spring pool of the Shunganunga.

The form here provisionally referred differs in some respects from the description, and requires further study.

Zoothamnium supernum, sp. nov.—(Plate 9, fig. 8). Bodies, when extended, conic-ovate, rather more than twice as long as broad; pyriform when contracted; grouped in a head-like cluster of 10–12 zooids mounted on brief pedicles,† on a long and stout simple peduncle, whose length contains that of an extended zooid 8 to 12 times; peristomal border dilated; ciliary disc moderately elevated; contractile cord spirally disposed within the sheath.

Length of zooids .0037 in.; of same with pedicles .005 in.: breadth of common peduncle .0008 in.

Habitat. On cenicium of a fresh-water polyzoan; Shunganunga creek, Topeka.

This species holds an intermediate place between those with a branching habit and *Z. simplex*. Its affinities are chiefly with the latter species. Kent speaks of the axial or central position of the contractile fibre as a distinguishing feature of *Zoothamnium*, contrasting it with the spiral fibre of *Vorticella* and *Carchesium*; but one of his figures of *Z. simplex** apparently represents that species with a spiral fibre. If his smaller figure be the correct one, however, it is possible that our species may have to be referred to another genus.

Trichophrya sessilis, sp. nov.—(Plate 9, fig. 9.) Body sessile, subquadrate, rather elongate, tapering somewhat posteriorly; tentacles long and fine, not distinctly capitate, placed in two groups at the antero-lateral angles of the body; plasma coarsely granular.

Size unrecorded.

*Manual of the Infusoria, Pl. xxxvi, fig. 17.

†Merely the produced proximal parts of the bodies; not structurally distinct.

This tentaculifer resembles *Tr. digitata* in not having the tentacles capitate. It is like *Podophrya phryganidarum*, Stein, and *P. Leichtensteini*, C. and L., in the character and distribution of the tentacles; but its sessile attachment refers it to the genus under which it is here placed.

It occurs abundantly upon *Helisoma trivolvis* in a pool of perennial water in the bottom-land of the Kansas river, North Topeka.

COELENTERATA.

HYDROZOA.

Hydra viridis, (of authors).—A species of *Hydra*, very common among algæ in Shunganunga creek agrees perfectly with this species as characterized in the fourth edition of the Micrographic Dictionary.

Hydra fusca, (of authors).—I have found (in May) a single specimen of a bright brown *Hydra* which I refer to this species. It occurred in the same station as did the preceding.

VERMES.

PLATYHELMINTHES.

Mesostomum Ehrenbergi, (?)—In a watery infusion of decaying animal matter; abundant.

NEMATELMINTHES.

Trichina spiralis, Owen.—It is impossible to guard too closely against this dread parasite, from which Kansas pork is by no means exempt. I have witnessed it in pork and in the muscular tissue of a person who ate the insufficiently cooked pork, with fatal result, in the city of Topeka. Other members of the same family, who ate of the infected pork in less quantity, were afflicted with serious illness.

Gordius robustus, Leidy.—Creeks and rivers of eastern and central (and probably western) Kansas; abundant.

Gordius varius, Leidy.—Lake Inman, McPherson county.

ROTIFERA

Philodina roseola, Ehr. (?)—Shunganunga creek.

Rotifer macrurus, Schrank.—Shunganunga creek; common.

Rotifer vulgaris, Schrank.—Shunganunga creek.

Rotifer tardus, Ehr.—Shunganunga creek; common.

Rotifer macroceros, Gosse.—Shunganunga creek; rather common.

Eosphora aurita, Ehr.—Among algæ from a draw on the Washburn College grounds. A very active rotifer.

Colurus amblytelus, Gosse.—Shunganunga creek; common.

Mastigocerca rattus, Ehr.—Shunganunga creek.

Monostyla bulla, Gosse.—Shunganunga creek; very common.

Pterodina patina, Gosse.—Shunganunga creek; rather common

Brachionus Bakeri, Ehr., var.—Shunganunga creek; very common.

Brachionus urceolaris, Ehr.—Shunganunga creek; a single specimen.

Notus quadricornis, Ehr.—Shunganunga creek.

There is little doubt that the form here recorded is the American representative of the well known *N. quadricornis*, though our form differs from the figures of Hudson and Gosse in having the posterior processes of the lorica shorter and of more uniform taper, the anterior processes shorter and very much further apart. Length of lorica. 0.11 in.

POLYZOA.

Plumatella arethusa, Hyatt.—A polyzoan that seems best referable to this very variable species is common on the lower side of submerged stones, old shells, etc., in Shunganunga creek. I have collected an identical or closely related form in Madison creek, Davis county.

ANNULATA.

Æolosoma Stokesii, sp. nov.—Body cylindrical, composed of eight articulations, or (in specimens undergoing division) of seven in the anterior department, all save the first of which are setigerous; ornamented with bright salmon-red rounded nuclei, which are usually most numerous near the extremities; setal fascicles in four rows; viz., two rather closely associated on either infero-lateral region; each fascicle composed of four or five unequal simple setæ; mouth and upper lip as in *Æ. venustum*, Leidy; anal segment emarginate.

Length of a moderately extended specimen with one supplementary division, .045 in.; breadth .004 in.

Quite common among algæ; Shunganunga creek.

In locomotion, the buccal segment is often laterally expanded, and the adjoining region slightly contracted, producing, as viewed from above, a temporarily distinct head and neck.

In the process of fission, chains of four or five nascent individuals may sometimes be seen, fed by one busy mouth. The food is rotated during digestion, as in *Nais*, etc.

This species is named in honor of Dr. A. C. Stokes, who, in his excellent little book, "Microscopy for Beginners," mentions a double-fascicled *Æolosoma* observed by him, which is, perhaps, identical with it.

Æolosoma Leidyi, sp. nov.—Body sub-cylindrical, consisting (in the specimen selected for description) of an anterior and a posterior department; anterior department including a buccal, unarmed, and six setigerous segments; posterior department of five setigerous segments; entire body ornamented with pale olive-green nuclei, which are in part rounded, but for the most part of rounded-polygonal, lobate, and other irregular outlines; mouth U-shaped or pyriform; œsophagus extending to between the second and third lateral setal fascicles, where it enters the abruptly widened and thence gradually narrowed intestine; setal fascicles arranged in four rows: two, closely associated, on either infero-lateral region; fascicles of the anterior department mostly composed of two or three long, straight, slender, and plain setæ and two or three simple, sigmoid, spine-like setæ about half as long; those of the posterior department being simply pairs of the shorter spine-like forms.

Dimensions not recorded.

Shunganunga creek, amongst algæ, May.

The species is common, but less so than *Æ. Stokesii*, which it resembles in the general proportions of its form, and which it exceeds in size.

Nais rivulosa, Leidy, var.—Body yellowish white, often with brownish dots or suffusions anteriorly; composed of (?) twenty-one spinigerous segments, or, in division, with 14 to 20 spinigerous segments in the anterior department; upper lip conical, flattish, capable of proboscidian extension; mouth circular; eyes in line with the oral crease; tail slightly narrowed, its extremity rounded; alimentary canal extending as an œsophagus to the fifth armed segment, where it suddenly widens to the first division of the ventricular intestine, within which, near the œsophageal entrance, is a crowded ring of ovate or conical glandular bodies; each spinigerous segment provided below with two transverse fascicles of recurved, or sigmoid, furcate podal spines of which there are three or four in each segment save the last one [or two?], which has five in each fascicle; each of these segments, save the first four, bears also, on either side, two lateral setæ, of which one is long, delicate, and feebly plumose, the other but half as long and somewhat spine-like.

Length of podal spines .0046 in.; length of free portion of the plumose setæ about .006 in.

Common among algæ in Shunganunga creek.

The *Diffugia* cases and fragments of algæ usually to be seen within the intestine, attest a mixed diet, and are much of the time subjected to slow rotation by ciliary action.

The form above described seems to differ from typical *N. rivulosa*, as described by the author of that species, only in the smaller number of spines in the ventral fascicles. I have examined many specimens from the above locality, but have never found this number to be more than four, save in the last segment, which, as stated, has five. As the number of spines in each fascicle is variable in many Nais, it is not unlikely that specimens from other waters may connect this variety, which I provisionally call var. *occidentalis*, with the typical form.

Dero intermedius, sp. nov.—Caudal pavilion cut into six lobes, of which four are digitate and two (the two lateral) resemble broadly rounded flanges which can, however, be so rolled or curled as to present at times a digitate appearance, thus resembling at one time *D. limosa* of Leidy, and at another *D. obtusa* with unduly expanded lobes.

Abundant in the Shunganunga.

The species can here be characterized only by allusion to the character of the caudal pavilion, which, however, being of eminent diagnostic value in this genus will probably suffice to distinguish it.

Lumbriculus spiralis, Leidy.—Common under submerged stones, Shunganunga creek.

It has been found impossible to issue this Number of the *Bulletin* within the month in which the first signature was printed. It should, therefore, bear *November 2* as the date of issue. The plates will appear with a later Number. To purchasers of this Number only, they will be furnished separately when printed.—[Editor.]