

# Additional records for algae, including some of the less common forms

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The Butler University Botanical Studies journal was published by the Botany Department of Butler University, Indianapolis, Indiana, from 1929 to 1964. The scientific journal featured original papers primarily on plant ecology, taxonomy, and microbiology.

## Recommended Citation

Palmer, C. Mervin (1941) "Additional records for algae, including some of the less common forms," *Butler University Botanical Studies*: Vol. 5, Article 18.

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# Butler University Botanical Studies

(1929-1964)

*Edited by*

**Ray C. Friesner**

The *Butler University Botanical Studies* journal was published by the Botany Department of Butler University, Indianapolis, Indiana, from 1929 to 1964. The scientific journal featured original papers primarily on plant ecology, taxonomy, and microbiology. The papers contain valuable historical studies, especially floristic surveys that document Indiana's vegetation in past decades. Authors were Butler faculty, current and former master's degree students and undergraduates, and other Indiana botanists. The journal was started by Stanley Cain, noted conservation biologist, and edited through most of its years of production by Ray C. Friesner, Butler's first botanist and founder of the department in 1919. The journal was distributed to learned societies and libraries through exchange.

During the years of the journal's publication, the Butler University Botany Department had an active program of research and student training. 201 bachelor's degrees and 75 master's degrees in Botany were conferred during this period. Thirty-five of these graduates went on to earn doctorates at other institutions.

The Botany Department attracted many notable faculty members and students. Distinguished faculty, in addition to Cain and Friesner, included John E. Potzger, a forest ecologist and palynologist, Willard Nelson Clute, co-founder of the American Fern Society, Marion T. Hall, former director of the Morton Arboretum, C. Mervin Palmer, Rex Webster, and John Pelton. Some of the former undergraduate and master's students who made active contributions to the fields of botany and ecology include Dwight W. Billings, Fay Kenoyer Daily, William A. Daily, Rexford Daudenmire, Francis Hueber, Frank McCormick, Scott McCoy, Robert Petty, Potzger, Helene Starcs, and Theodore Sperry. Cain, Daudenmire, Potzger, and Billings served as Presidents of the Ecological Society of America.

Requests for use of materials, especially figures and tables for use in ecology text books, from the *Butler University Botanical Studies* continue to be granted. For more information, visit [www.butler.edu/](http://www.butler.edu/)

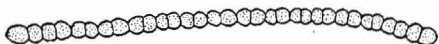
# ADDITIONAL RECORDS FOR ALGAE, INCLUDING SOME OF THE LESS COMMON FORMS

By C. MERVIN PALMER

Over a period of several years, the writer has accumulated a record of new locations for several fresh-water algae some of which are not commonly encountered. In some cases the material has been collected and submitted by students and others, from whom permission has been obtained to include such algae in this article. All but three of the forms were collected in Indiana, one was collected in Massachusetts and two are from California. Specimens of all of the forms listed with the exception of *Stichococcus bacillaris* and *Volvox mononac* have been placed in the herbarium of Butler University. All of the text figures shown are made from camera lucida drawings of the material studied. The writer expresses his appreciation to Dr. Francis Drouet for his aid in checking the identification of several of the forms. The twenty-seven algae are listed alphabetically under the name of the class to which they belong.

## MYXOPHYCEAE

*Anabaena constricta* (Szafer) Geitler. Collected by C. K. Calvert, November 1, 1932, from the effluent trough of the sewage treatment plant at Indianapolis, Indiana. Very abundant and mixed with sulphur bacteria. Species not previously recorded for Indiana.

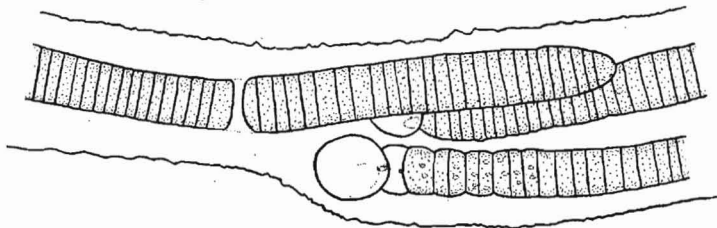


*Anabaena viguieri* Denis et Frémy. Collected by C. M. Palmer, July 10, 1932, in a pond at a fish hatchery near Martinsville, Morgan County, Indiana. Planktonic. Species not previously recorded for Indiana.



*Desmonema wrangelii* (Ag.) B. and F. Collected by R. Prettyman, July 30, 1938, in Marble Rock creek, Sequoia National Park, California. Attached to rocks. Under the microscope it has a rather striking and characteristic form with its radiate growth and irregu-

larly but abundantly forked branching. This is a rare alga with reports of it for only about 6 states.



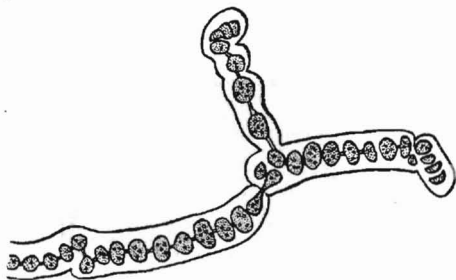
*Gloeotrichia natans* (Hedw.) Rab. Collected by C. M. Palmer, July 13, 1938, on one of the ponds at the state fish hatchery in Marion County, Indiana. Abundant; attached to larger aquatic plants and also free-floating. The brownish gelatinous beads were irregular in form and variable in size. Species previously reported in Indiana for Monroe and Vigo Counties.



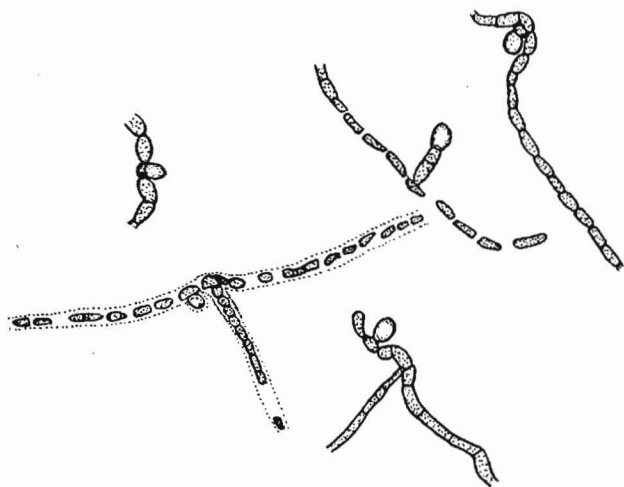
*Nodularia spumigena* Mertens. Collected by C. M. Palmer, July 12, 1938, in a bog called "Bacon's Swamp," Indianapolis, Indiana. Present in considerable quantity forming a slimy blue-green layer attached to a submerged cardboard box. Species previously reported in Indiana for Knox County.



*Stigonema hormoides* (Kütz.) B. and F. Collected by R. Prettyman and C. M. Palmer, May 20, 1932, near the shore of Sugar creek in Parke county, Indiana. Attached to wet vertical rock surface. This alga was reported under the name, *Sirosiphon campactus*, for Monroe County in 1926.

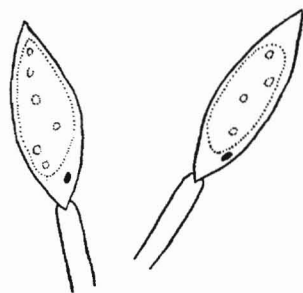


*Nostochopsis lobatus* Wood. Collected by Winona Welch, July 5, 1937, in Saluda creek, Jefferson County, Indiana. Attached to rock in slowly running water. Genus not previously reported in Indiana.



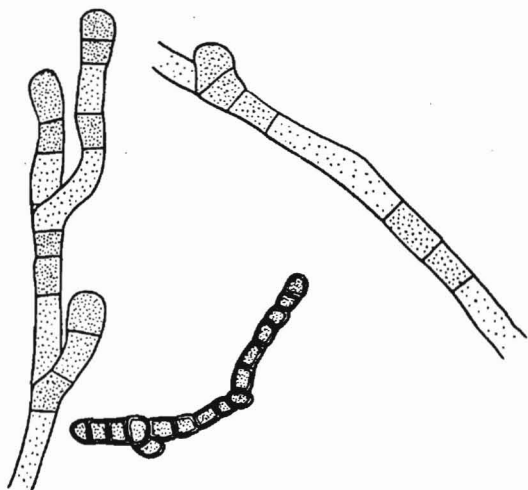
## CHLOROPHYCEAE

*Chlorogonium euchlorum* Ehr. Collected by E. Hupp, June 24, 1939, in barnyard pool, Marion County, Indiana. Forming a prominent green bloom. Genus had not been reported previously for Indiana until Lackey (Pub. Health Repts., U. S. 57:253-260) in Feb. 1942 listed it for Dearborn County.

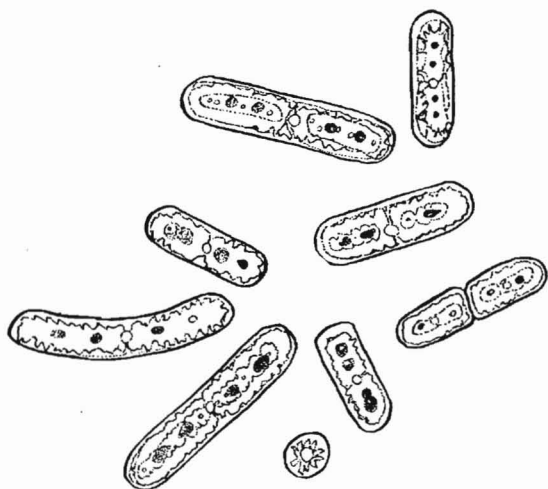


*Chlorotylum mamniforme* (Balbi) Kütz. Collected by Edna Banta, May 23, 1936, in small stream, 3.5 miles from Brooksborg,

Jefferson County, Indiana. Forming papillate, gelatinous crust on rocks. Genus new for Indiana.

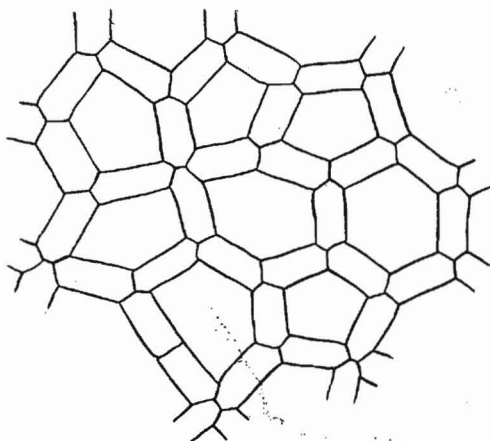


*Cylindrocystis brebissonii* Menegh. Collected by C. M. Palmer, in 1930 from a small pool beside a stream, near Corydon Junction, Harrison County, Indiana.

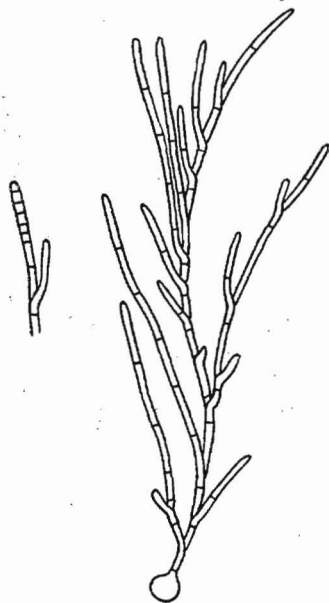


*Hydrodictyon reticulatum* (L.) Lagerheim. Collected by C. M. Palmer, June 15, 1933, in small artificial pond containing stagnant

water, Marion County, Indiana. Species previously listed for 7 counties in the state.

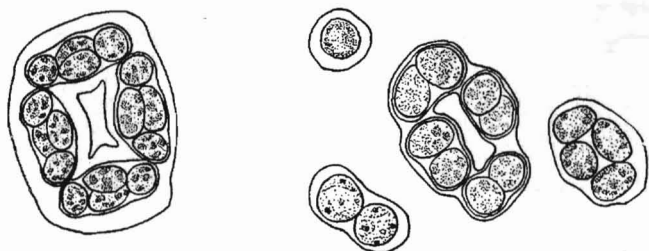


*Microthamnion strictissimum* Rab. Collected by C. M. Palmer, February 2, 1930, in a small stream on the campus of Butler University, Marion County, Indiana. Although this is one of the filamentous green algae, it has a record for only 3 counties in the state.

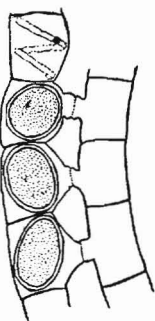


*Oocystis novae-semlicae* Wille. Collected in almost pure growth at two places several miles apart by students of botany at Shortridge

High School, Indianapolis, Indiana, and turned over to the writer by their teachers, Miss E. S. Rawls and Miss M. Campbell. One collection was made from an outdoor fish-pond in a yard in Indianapolis on Sept. 29, 1938. The other was collected a few days later from a pond at New Augusta, Marion County, Indiana. While the material fits the description of *O. novae-semiliae*, its most striking character, the aggregation of some of the cells into very regular cubical colonies, seems not to be previously described. The cells are held in groups of four by the swollen wall of the mother cells; in turn, these are held in groups of 4 to form the cubical colony which is hollow and open on two of its 6 sides. Due to numerous rod-shaped bacteria attached radially to the outside of the mother cell walls, the alga resembles somewhat the appearance of *Bohlinia*. The species has no previous Indiana record.



*Spirogyra varians* (Hass.) Kütz. Collected by C. M. Palmer, May 21, 1932, in Coal creek, Parke County, Indiana.

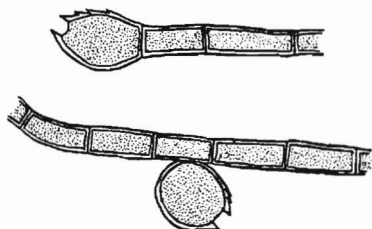


*Stichococcus bacillaris* Näg. Collected by C. M. Palmer, March 1936, in Monroe County, Indiana. The species is new for Indiana.

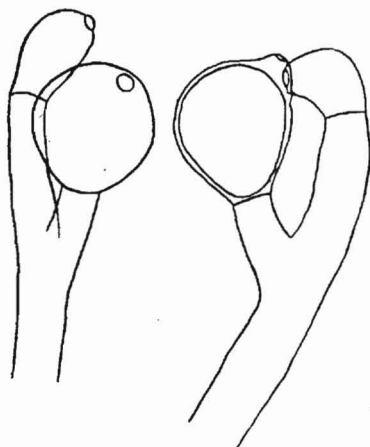
*Trentepohlia aurea* (L.) Martius. Collected by R. Prettyman, April 23, 1932, on dry rock surface, Monroe County, Indiana. Re-



ported for the same county by Andrews in 1926 as *Chroolepus aureus*.

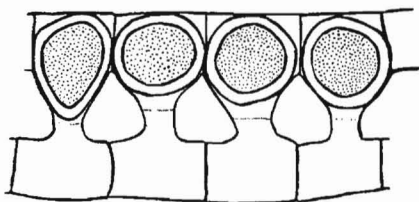


*Vaucheria arechavaletae* Magn. et Wille. Collected by L. Martens, March 12, 1937, in Monroe County, Indiana, about 3 miles southwest of Bloomington in Maple Hill Pond creek; attached, in running water; abundant. Oogonium and antheridium located on the same long lateral branch, the antheridium at the end of this branch with the oogonium at the end of a side fork of the sexual branch. Oogonium with pore lateral or oblique. No ripe oospores seen. Beak of oogonium extends toward the antheridium which has one opening which is terminal. Diameter of vegetative strands, 22-24 microns. Length of oogonium, 44-61 microns with a diameter of 44-57 microns. Length of antheridium, 33-41 microns with a diameter of 21-23 microns. Reported previously for South America by Wille, in 1884.



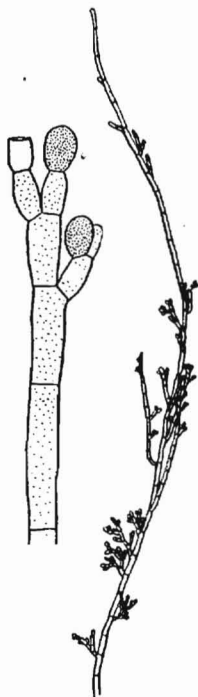
*Volvox mononae* Smith. Collected by H. G. Nester, September 1932, in pool at state fish hatchery, Marion County, Indiana. No cytoplasmic connections were evident between the protoplasts even after the addition of methylene blue stain. Diameter of colony, 225 microns; diameter of cell, 6 microns.

*Zygnema normani* Taft. Collected by C. M. Palmer, February 1932, in fish hatchery pool, Marion County, Indiana. Species new for the state.



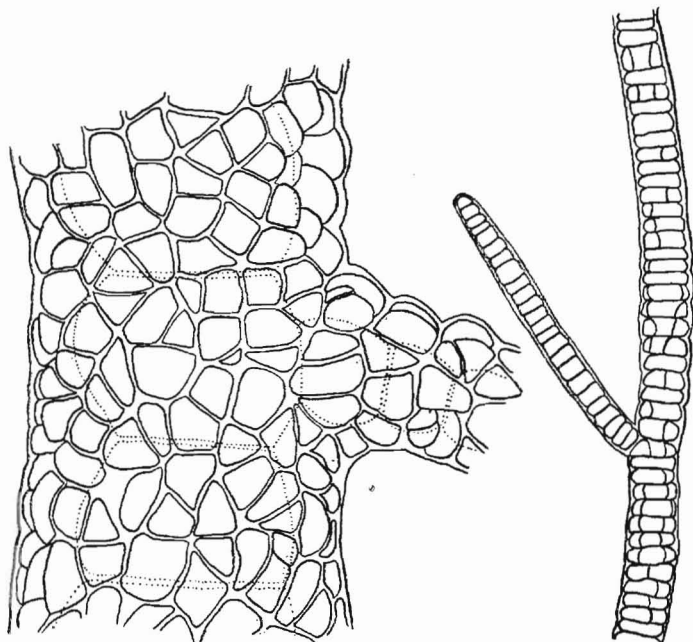
## RHODOPHYCEAE

*Audouinella violacea* (Kütz.) Hamel. Collected by Wm. A. Daily, April 30, 1939, from rock surface beneath a falls in a canyon at Muscatatuck State Park, Jennings County, Indiana. Genus not previously reported for Indiana.



*Compsopogon coeruleus* (Balbis) Mont. Collected by Hellen Aufderheide, March 16, 1934, from an indoor fish bowl, Indian-

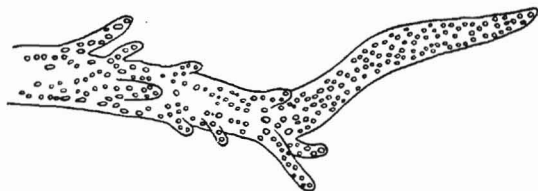
apolis, Indiana. The alga was attached to *Elodea*. This alga is a distinctly tropical one and the fact that there were tropical fish in the bowl indicates the probability that the *Compsopogon* was imported from a more southern habitat. The material appeared to be in excellent condition and some strands were found producing spores. Length of strands, up to 2.5 cm.



*Porphyridium cruentum* Näg. Collected by Charlene Coffing, May 10, 1934, from greenhouse soil in Marion County, Indiana.

#### CHRYSOPHYCEAE

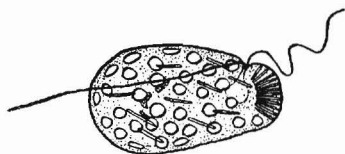
*Hydrurus foetidus* (Vill.) Kirchn. Collected by R. Prettyman, July 28, 1938, at a spring which runs into Silliman creek, Sequoia National Park, California.



## CHLOROMONADOPHYCEAE

*Merotricha capitata* Skuja (Acta Horti Bot. Univ. Latviensis 7:33. 1934). Collected by C. M. Palmer, June 27, 1936, in small numbers in certain shallow parts of a bog called "Cedar Swamp" near Woods Hole, Massachusetts; in subsequent samples it was taken from the bog during the following 5 weeks. This genus, it seems, has not been reported previously in the Western Hemisphere. Skuja described the organism originally from a locality in Latvia. The genus *Merotricha* Mereschkowsky (Trudy S.-Peterbursk. Obshch. Estestvoispit 8:291-292. 1877; Arch. f. mikrosk. Anat. 16:186. 1878) is based upon material collected in northern Russia; no measurements and but one flagellum are mentioned in the original description of the type species, *M. bacillata* Mereschk. *M. capitata* is a member of the Chloromonadophyceae to which class also belongs *Gonyostomum semen* (Ehrenb.) Diesing, a flagellate abundant in the same "Cedar Swamp" (Drouet and Cohen, Biol. Bull. 68:422-439. 1935). In contrast to *Gonyostomum*, *M. capitata* is circular in cross-section and has a prominent tuft of trichocysts in the anterior region with flagella inserted laterally just behind the tuft of trichocysts, and contains a rounded rather than 3-angled reservoir. There is no caudus at the posterior end. Like *Gonyostomum*, it contains bright green chromatophores which turn blue-green when treated with acid and has trichocysts scattered throughout the periphery of the protoplast. Also like that of *Gonyostomum*, the cell has the property of bursting under very slight changes of external conditions. Measurements of 25 cells indicates that the organisms range from 36-45 microns in length and from 18-25 microns in diameter. This range in linear measurement is greater than that given by Skuja, whose description reads 40-46 microns long and 20-25 microns wide. In the Massachusetts material there are two flagella, a short one extending forward and a longer one extending backward from the opening of the reservoir. On one cell measuring 39 by 22 microns, the two flagella were 31 and 48 microns respectively in length. The forward flagellum is commonly twisted and waving to and fro, while the posteriorly directed flagellum is straight and not so active. Chromatophores are numerous, discoid, about 4 microns in diameter, and bright green. Dark irregular bodies present in the posterior region are possibly reserve food (oil?). Trichocysts are in the form of short rods which

are ejected as such or as long gelatinous threads upon the addition of dilute methylene blue solution.



## EUGLENOPHYCEAE

*Colacium vesiculosum* Ehr. Collected by R. Prettyman, March 10, 1937, in a bog known as "Bacon's Swamp," Marion County, Indiana. Attached to Cyclops. Genus not reported previously for the state.

## HETEROKONTAE

*Mischococcus confervicola* Näg. Collected by R. Prettyman, March 23, 1937, in small pond, Marion County, Indiana. Genus is new for the state.

*Botrydium granulatum* (L.) Grev. Collected by Wm. A. Daily and C. M. Palmer, May 10, 1934, on the west bank of White river (west fork), Johnson County and Marion County, Indiana. The alga grew on a wet, sloping bank of earth in an area not more than 10 feet from the edge of the water extending intermittently for a distance of at least one-fourth of a mile. Species previously reported for 5 counties in the state.