ANNOTATED LIST OF THE ALGAE OF EASTERN ILLINOIS.

EDGAR NELSON TRANSEAU

The following list of algae contains the names of the species that have been observed and identified during a study of algae periodicity extending from January, 1908, to January, 1913. No effort has been made to name all the forms found or to collect new species. All our attention has been directed toward collecting the forms of interest in connection with periodicity at frequent intervals. At this time a large number of the 1912 collections have not been critically studied, although almost all of them have been examined for special purposes. A preliminary account of the classification of our algae on the basis of their periodicity may be found in the "Transactions of the American Microscopial Society" Vol. 32, No. 1, Jan., 1913. As indicated in the text many of these species were originally determined by Mr. F. S. Collins, without whose help this study would have been impossible. Several species are listed under the names I have given them in my notes. These forms will be described elsewhere. Where no locality is mentioned, the stations in the immediate vicinity of Charleston are to be understood. In the collecting of specimens the writer has been greatly aided by Mr. T. L. Hankinson, Mr. Homer Sampson, Mr. E. L. McCabe, Mr. Harry Givens and Mr. Hanford Tiffany. By their generous cooperation it has been possible to make simultaneous collections at widely separated points in eastern Illinois. In addition a number of students have contributed collections of no little interest. To all of these the writer makes grateful acknowledgement. To anyone wishing to undertake the study of the algae of his locality I would suggest the following as the most useful general works. All of them possess bibliographies of the publications dealing with special groups.

1. F. S. Collins, The Green Algae of North America. Tufts College Studies. Vol. 2, No. 3, pp. 80-463. 1909.
2. F. S. Collins, The Green Algae of North America (supplement). Tufts College Studies. Vol. 3, No. 2, pp. 70-109. 1912.
3 G. S. West, A Treatise on the British Fresh Water Algae. Cambridge, 1904.
4. K. E. Hirn, Monographie und Iconographie der Oedogoniaceen. Helsingfors, 1900.
5. J. Tilden,. Minnesota Algae. (Schizophyceae) Minnesota Botanical Survey, Minneapolis, 1909.
6. E. Lemmermann, Kryptogamenflora der Mark Branden-

burg. Vol. 3, Algen. (Schizophyceen, Flagellaten, Peridineen) Leipsig, 1910.
7. F. Oltmanns, Morphologie and Biologie der Algen. Two Vols. Jena, 1904.
8. A. Pasher, Die Suesswasserflora Deutschlands, Oestereichs und der Schweiz, Jena, 1912.

Schizophyceae

Chroococcaceae

Chroococcus turgidus (Kuetzing) Naegeli.
Ponds. Seen in many collections but always in small numbers.

Aphanocapsa brunnea (A. Braun) Naegeli.
Abundant in the East Tile Factory pond, Charleston, July, 1909.

Aphanothece stagnina (Spreng) A. Braun.
Common in summer and autumn in the Tile Factory ponds, and the east Big Four pond, Charleston.

Clathrocystis aeruginosa Henfrey.
Very abundant in a small pond adjoining the reservoir, Casey, September, 1912.

Coelosphaerium Kuetzingianum Naegeli.
At times an important constitutent of the plankton in the Tile Factory and east Big Four ponds, Charleston.

Merismopaedium convolutum Brebisson
Abundant in the summer plankton of the Tile Factory and Hodgen's ponds.

Merismopaedium tennuissimum Lemmermann.
Common in the new Tile Factory pond, Charleston, September, 1911.

Oscillatoriaceae

Oscillatoria Agardhii Gomont.
Found in pond near the Casey reservior, September, 1912. Fide Collins.

Oscillatoria amphibia Agardh.
In ponds and streams, occasionally abundant. In the Ice Plant pond, Casey, it was found in the hot water near the steam exhaust. It has been recorded from the east Big Four pond, and the Town Branch near Charleston. Fide Collins.

Oscillatoria formosa Bory.
Found in ponds near Charleston and Casey. Fide Collins.

Oscillatoria limosa Agardh.
Very abundant during low water stages in streams, stream pools, and ponds. Common in streams polluted by sewage. Found at all seasons of the year locally abundant.

Oscillatoria princeps Vaucher.
Very abundant at irregular intervals in ponds and streams. Fide Collins.

Oscillatoria splendida Grev.
Pool in stone quarry northwest of Embarras, March, 1911.

Arthrospira Gomontiana Setchell.
Very abundant during winter and early spring in the middle Tile Factory, and second Big Four ponds.

Spirulina major Kuetzing.
Rare. Has been observed in collections from the Tile Factory ponds and a drainage ditch north of Martinsville.

Phormidium ambiguum Gomont.
Found on shell of a live snapping turtle in stream south of Ashmore.

Phormidium foveolatum
On submerged water plants, Campus lily pond, Charleston.

Phormidium inundatum Kuetzing.
Found in abundance at the north end of the pond on the Brookhart farm, about one mile southwest of Oilfield, April, 1911.

Phormidium uncinatum (Ag.) Gomont.
Common in wet-weather streams and pools in winter and spring. Fide Collins.

Lyngbya aerugineo-coerulea (Kuetz) Gomont.
Abundant in drainage ditch northwest of Martinsville, October, 1910. Associated with Spirulina major. Fide Collins.

Lyngbya aestuarii Liebm.
Abundant in all ponds in the vicinity of Charleston. During a wet period in November, 1909, it grew abundantly and developed a mat on the west bank of Hodgen's pond in association with Rhizoclonium fontanum Kuetzing. Fide Collins.

Nostocaceae

Nostoc carneum Agardh.
Abundant in pool at limestone quarry northwest of Embarras, November, 1910. Fide Collins.

Nostoc muscorum Agardh.
Very abundant during the summer of 1910 in the pools along the Clover Leaf R. R., north of Charleston. Fide Collins.

Nodularia sphaerocarpa Bornet and Flahault.
Found in floating masses on Marshall pond, four miles north of Charleston. Fruits during May. Fide Collins.

Nodularia spumigena Mertens.
Collected in roadside pools near Decker, Indiana, May, 1911 in fruit. Fide Collins.

Anabaena catenula (Kuetz.) Bor. & Fl.
Occasionally common in ponds near Charleston and Casey. Produced spores in Marshall pond, May, 1912.

Anabaena flos aquae (Lyngb.) Breb.
Found but once, in the pond just west of the Greenup station south of the Vandalia R. R. It formed a bluish green scum on the water.

Anabaena inaequalis Bor. & Fl.
During May and June it has been recorded for Hodgen's pond and Marshall pond. Produces spores in May. Fide Collins.

Anabaena laxa (Rab.) A Braun.
Found in material collected in Hodgen's pond during September, 1908. Fide Collins.

Cylindrospermum muscicola Kuetzing.
Recorded from Marshall pond, Charleston, and an artificial pond near Sullivan. Fruits during May. Fide Collins.

Scytonemataceae

Tolypothrix tenuis Kuetzing.
Common on submerged objects in the Big Four ponds, Charleston, and the Ice pond, Ashmore. Also collected in wet-weather pools near Charleston and Oilfield.

Rivulariaceae

Calothrix Kawrayskii Schmidle.
Common as an epiphyte on green algae in Hodgen's and the Tile Factory ponds. Not previously recorded for North America. Fide Collins.

Calothrix stagnalis Gomont.
Common each year in the Charleston ponds. Fruits in September. Fide Collins.

Rivularia natans (Hedw.) Welw.
Found abundantly during autumn months in the east Big Four pond. Fruits in October and November. Vegetative period begins in July.

Flagellatae

Euglenaceae

Euglena deses Ehrenberg.
Common in streams carrying some sewage, usually scattered among masses of the viridis type.

Euglena oblonga Schmitz.
Very abundant at the Ashmore Ice pond, October, 1912.

Euglena sanguinea Ehrenberg.
Appearing at intervals of a year or more in a number of our larger ponds in such quantity as to produce a brick-red or blood red scum on the water.
Euglena spirogyra Ehrenberg.
Rare. Only a few scattered specimens have been recorded.
Euglena viridis Ehrenberg.
Probably the commonest form in polluted streams, ponds, and wet-weather pools. But it is difficult to be certain of the identification when the chromatophore is masked by other cell contents.
Phacus longicauda (Ehrenberg) Duj.
Rare in ponds.
Phacus pleuronectes (O. F. M.) Duj.
Periodically abundant in ponds.

Peridiniales

Peridiniaceae

Ceratium hirundinella (O. F. M.) Schrank.
Common at times in all the ponds of eastern Illinois from which I have collections.

Bacillariales

Bacillariaceae

Melosira varians Agardh.
A periodic constituent of the plankton in the streams of this region.
Meridion circulare (Grev.) Ag.
Occasionally very abundant in small ditches and stream pools.

Confervales

Confervaceae

Ophiocytium arbuscula (A. Braun) Rabenhorst.
Rare. Recorded from the pond southeast of Lerna, and a pool near Decker, Ind.
Ophiocytium cochleare (Eichwald) A. Braun.
Common in ponds during the colder months.
Ophiocytium gracilipes (A. Braun) Rabenhorst.
Rather rare in pools during the colder months of the year.
Ophiocytium parvulum (Perty) A. Braun.
Rather common in ponds and pools during late fall and early spring.
Conferva bombycina Agardh.
Very abundant in streams, ponds and pools. The form **tenuis** frequently occurs with it.

Conferva minor Klebs.
Very abundant in all aquatic habitats during open winter weather and the spring months.

Conferva utriculosa Kuetzing.
Not rare in ponds in the spring.

Botrydium granulatum (L.) Greville.
Apparently rare. Was found by Mr. T. L. Hankinson near Charleston in October, 1903.

Botrydium Wallrothii Kuetzing.
Very abundant on moist garden soil throughout the summer and autumn. Unlike Stichococcus flaccidus it grows in full sunlight. When the resting spores are formed it may assume a gray or reddish color.

Conjugales.

Desmidiaceae

Many species of Desmids occur in the collections, and the periodicity of some forms has been studied. It is hoped that by another year these collections will have been studied by some one competent to name them, and a list be ready for publication.

Zygnemaceae

Zygnema Collinsiana mss.
A new species remarkable for its blue spores, whose median wall is marked by large round pits. Found in association with Zygnema stellinum in the R. R. ditches between Oilfield and Casey. May, 1912.

Zygnema insigne (Hass.) Kuetz.
Common in pools, ditches, ponds, and small intermittent streams. Fruits in April and May.

Zygnema pectinatum (Vauch.) Agardh.
Very abundant in ponds and wet-weather pools. Fruits during April, May and June. Lateral conjugation has been observed in the east Big Four pond. Aplanospores and akinetes were produced abundantly in the spring of 1912.

Zygnema pectinatum anomalum (Rolfs) Kirchner.
Occurs with the type.

Zygnema pectinatum decussatum (Vauch.) Kirchner.
Not uncommon in ponds. As far as my observations go there is little reason for considering this a variety of **pectinatum.** In its distribution, behavior, and appearance it appears to be quite distinct.

Zygnema stellinum (Mueller) Agardh.
The most abundant of the Zygnemas of this region. It occurs in ponds, pools, ditches, and intermittent

streams. Fruits from March to May. Produced akinetes in 1912. Fide Collins.

Spirogyra areolata Lagerh.

Occurs in the pond west of Greenup, in the pond on the Brookhart farm southwest of Oilfield and Hodgen's pond.

Spirogyra catenaeformis (Hass.) Kuetzing.

Very abundant in pools, ponds, and small streams. Fruits during April, May, and June. Fide Collins.

Spirogyra circumlineata mss.

Resembles **varians,** but is considerablly larger. Found in Marshall pond during May, 1912.

Spirogyra communis (Hass.) Kuetzing.

Common in ponds and intermittent streams. Fruits from April to June.

Spiragyra condensata (Vauch.) Kuetzing.

Vegetative filaments apparently of this species have been found in several small streams and ponds. It has been found in fruit only once in Campus creek about one mile from the Normal school. The dimensions and appearance correspond closely to Petit's description.

Spirogyra crassa Kuetzing.

Rather frequent in ponds at Charleston, Ashmore, Casey and Newton. Dimensions often smaller than those given in Collins' Green Algae of North America. Fruits from May to July.

Spirogyra decimina (Mueller) Kuetzing.

Very generally distributed in streams and ponds. Fruits commonly during June, July and August. Fide Collins.

Spirogyra decimina triplicata Collins.

More abundant than the type. Frequently associated with it. Fruits about the same time. Fide Collins.

Spirogyra dubia Kuetz.

Found during the summer months in the Polk street pond, Charleston and the pasture ponds south of Ashmore.

Spirogyra fluviatilis Hilse.

Has been found fruiting in the Big Four ponds, Charleston, and in the Embarras river near Greenup, and Wheeler. The cells have three or four chromatophores and the spores have the median wall pitted. Fruits during the summer months.

Spirogyra gracilis (Hass.) Kuetzing.

Rare in swampy intermittent stream near Casey. Found fruiting in April.

Spirogyra Grevilleana (Hass.) Kuetzing.
Rather common in ponds, wet-weather pools, and streams. Fruits during April and May.

Spirogyra Hassallii (Jenner) Petit.
Rather rare in ponds near Charleston, Greenup and Casey. Fruits during April and May.

Spirogyra Illinoiensis mss.
A new form related to S. stictica. Differs in having larger dimensions, 6-8 chromatophores, and spores with the median wall punctate. Fruits in May. Known only from the pond southeast of Lerna.

Spirogyra inconstans Collins.
This species is abundant each year in a pond on the Brookhart farm about one mile southwest of Oilfield. It has also been found near Charleston and Lerna. Collins does not mention the fact that the mature spores have the median wall punctate. Fruits during May.

Spirogyra inflata (Vauch.) Kuetzing.
Very common in early spring in ponds, pools and ditches throughout eastern Illinois. Fruits in March and April.

Spirogyra inflata foveolata mss.
A new variety found in the Ice Plant pond, Casey, April, 1911. Differs from the type in having the median wall of the spore pitted.

Spirogyra jugalis (Dillw.) Kuetzing.
Recorded for the middle Tile Factory pond and a small pond north of Wrightsville. It probably occurs elsewhere in this vicinity. Fide Collins.

Spirogyra Jurgensii Kuetzing.
Common in ponds, pools, and streams. Fruits during April and May.

Spirogyra longata (Vauch.) Kuetzing.
Common, in ponds and pools. Fruits from April to June. Has been collected at Lawrenceville, Charleston, Paris, Westfield and Greenup. Fide Collins.

Spirogyra maxima (Hass.) Wittrock.
Rare. Recorded from ponds near Charleston.

Spirogyra narcissiana mss.
Found during September and October in fruit in the dam at Urban Park, west of Charleston. Vegetative cells somewhat like those of S. tenuissima, but the end walls are different, and the spores are formed without conjugation (aplanospores).

Spirogyra neglecta (Hass.) Kuetzing.
Rather common apparently in a vegetative condition, but

has been found in fruit rarely. Fruits in late spring and summer. Fide Collins.

Spirogyra nitida (Dillw.) Link.

Common in ponds throughout eastern Illinois. Fruits in summer and autumn. The dimensions are often smaller than those given by Collins. Our form corresponds closely to the description given by Hassall in his British Freshwater Algae.

Spirogyra orthospira Naegeli. **(Spirogyra Majuscula** Kuetz.)

Bottom land ponds and wet-weather pools. Common. Fruits from April to July. Fertile cells not infrequently inflated. Fide Collins.

Spirogyra Petitiana mss.

A species near **decimina.** Occurs only in the new Tile Factory pond, Charleston, but has been found for six years during the summer.

Spirogyra porticalis (Mueller) Cleve.

Very common in ponds, small and large streams. Beyond Charleston I have collected it at Lawrenceville, Olney and Paris. Fruits from March to May. Fide Collins.

Spirogyra punctiformis mss.

Found only in the Tile Factory ponds, Charleston. Near **punctata.** Differs in having one or two chromatophores, and larger dimensions.

Spirogyra quadrata (Hass.) Petit.

Collected in the new Tile Factory pond, Charleston.

Spirogyra setiformis (Roth) Kuetzing.

Common in ponds at Charleston and Ashmore. Fruits usually in late autumn. Spore wall hyaline showing the chromatophores within. Fide Collins .

Spirogyra Spreeiana Rabenhorst.

Rare in ponds near Charleston and Ashmore. Fruits during April and May.

Spirogyra stictica (Eng. Bot.) Wille.

Rather common. Has been collected in a fruiting condition at Ashmore, Sullivan and Casey. Fruits during April and May.

Spirogyra submaxima mss.

Has been collected annually in a pond east of Charleston. Near **maxima,** but has eight or nine chromatophores, spores smooth and with smaller dimensions.

Spirogyra tenuissima (Hass.) Kuetzing.

Very common throughout eastern Illinois, in ponds, pools and intermittent streams. Fruits in early spring.

Spirogyra tenuissima rugosa mss.

Rather frequent with the type. Medium spore wall minutely roughened.

Spirogyra varians (Hass.) Kuetzing.
The most abundant Spirogyra of eastern Illinois in the spring. Highly variable. Found in all aquatic habitats. Fruits from April to July.

Spirogyra Weberi Kuetzing.
Very common throughout eastern Illinois. Usually fruits in early spring. Found in all aquatic habitats.

Mesocarpaceae

Mougeotia Boodlei (W. & G. S. West) Collins.
Rather frequent in ponds. Fruits both sexually and asexually, in spring or fall or both. Fide Collins.

Mougeotia calcarea (Cleve) Wittrock.
Asexually fruiting material of this species was collected in the Ice Plant pond, Casey, April, 1911.

Mougeotia divaricata Wolle.
This species is common in the ponds near Charleston. It has been collected in a fruiting condition in summer and autumn. It fruits readily when brought into the laboratory.

Mougeotia genuflexa (Dillw.) Agardh.
Very common in ponds throughout eastern Illinois. Frequently found in a geniculate condition, but has been collected in fruit only during the spring of 1912.

Muogeotia genuflexa gracilis (Kuetzing) Reinsch.
Rare in wet-weather pools. Fruited in spring of 1912. Fide Collins.

Mougeotia quadrangulata Hassall.
Collected in a fruiting condition in Campus pond, the second Big Four pond, and the pools along the Clover Leaf R. R. north of Charleston, during the spring of 1912.

Mougeotia robusta (De Bary) Wittrock.
Common. Fruiting material has been collected in the pools along the Clover Leaf R. R. north of Charleston, and in Campus creek. Fruits in May and June.

Mougeotia robusta biornata Wittrock.
Common in Campus creek. Differs from the type in having a pitted median spore wall.

Mougeotia scalaris Hassall.
Has been collected in a fruiting condition in May in the middle Tile Factory and Marshall ponds.

Mougeotia Transeaui Collins.
Known only from the Embarras river near Greenup and the ponds near Charleston. Fruits both sexually and asexually, in fall or spring.

Mougeotia viridis (Kuetzing) Wittrock.
Collected in fruit in Campus pond, May, 1912.

Volvocales

Chlamydomonadaceae

Haematococcus pluvialis Flotow.
Apparently rare. Have noted typical specimens but once. These were collected from a small pool near Hodgen's pond.

Volvocaceae

Gonium sociale (Dujard) Warming.
Found in Urban Park pond, April, 1912.
Gonium pectorale Mueller.
Not infrequent in ponds and pools.
Pandorina Morum (Mueller) Bory.
Very common in the more permanent ponds of eastern Illinois. Very conspicuous in low water stages—probably through concentration.
Pleodorina illinoisensis Kofoid.
Found in Little Muddy creek, north of Sailor Spring, August, 1911.
Eudorina elegans Ehrenberg.
Appears rather regularly in ponds during mid-summer.
Volvox globator Linnaeus.
This species has been collected in the Ice Plant pond at Casey and in a roadside ditch near Decker, Indiana.
Volvox aureus Ehrenberg.
Collected but once in the west Tile Factory pond, Charleston, July, 1911.
Ineffigiata neglecta W. & G. S. West.
Very abundant in the plankton of the ponds of eastern Illinois.
Tetraspora lubrica (Roth) Agardh.
Very abundant in streams and ponds during the autumn, winter and spring. The fronds not infrequently attain a length of four feet. Fide Collins.
Tetraspora gelatinosa (Vauch.) Desvaux.
Collected only once in a pond near the reservoir at Casey, Sept., 1911.
Apiocystis Brauniana Naegeli.
Collected at Marshall pond north of Charleston in April, 1912.

Protococcales

Protococcaceae

Chlorochytrium Knyanum Cohn & Szymanski.
Very abundant in the leaves and stems of Nasturtium

lacustre in the pond southeast of Lerna, May, 1912. Lerna, May, 1912.

Scenedesmaceae

Zoochlorella conductrix Brandt.
Occurs abundantly associated with the green Hydra and Paramoecium bursaria.

Zoochlorella parasitica Brandt.
Found in the west Big Four pond, Charleston, in the fresh water sponge.

Raphidium falcatum (Corda) Cooke.
A common constituent of the pond plankton.

Oocystis solitaria, forma **major** Wille.
Common in the ice plant pond at Casey.

Gloeotaenium Loitlesbergerianum Hansgirg.
Has been collected in Hodgen's pond, the middle Tile Factory pond, and the east Big Four pond, near Charleston. Occurs from June to October. Consists of single cells and 2-, 4- and 8-celled families. The life history of this peculiar form has been described in the Botanical Gazette, Jan., 1913.

Nephrocytium Agardhianum Naegeli.
Common in all of the more permanent ponds.

Scenedesmus bijuga (Turp.) Wittrock.
Very common in the plankton of ponds. This and the following species multiply rapidly in laboratory aquaria and color the water a bright green. Species of **Rhaphidium** are commonly associated with them.

Senedesmae bijuga alternans (Reinsch) Hansgirg.
Occurs with the type.

Scenedesmus obliquus (Turp.) Kuetzing.
Found in plankton from the Lily pond on the campus.

Scenedesmus quadricauda (Turp.) Kuetzing.
Very common. Along with the type I have noted the forms **setosus, abundans,** and **horridus** of Kirchner.

Crucigena rectangularis (A. Braun) Gay.
Abundant in the east Big Four pond during September, 1911.

Selenastrum acuminatum Lagerheim.
Not infrequent in plankton from ponds.

Kirchneriella lunaris (Kirchner) Moebius.
Very rare.

Coelastrum cambricum Archer.
Seen in material from the Lily pond on the Campus, and the pond at Urban Park, Charleston.

Coelastrum microporum Naegeli.
Very abundant in most of our ponds.

Sorastrum spinulosum Naegeli.
Frequent in most of the permanent ponds.

Hydrodictyaceae

Hydrodictyon reticulatum (L.) Lagerheim.
A common plant in the town branch and the bottom land ponds near Newton. My records of its occurrence extend from May to September.
Pediastrum angulosum (Ehrenberg) Meneghini
Rare in the plankton of ponds.
Pediastrum Boryanum (Turp.) Meneghini.
Very abundant.
Pediastrum duplex Meyen.
Very abundant.
Pediastrum duplex clathratum A. Braun
Common with the type.
Pediastrum tetras (Ehrenb.) Ralfs.
Rare, among other species.

Ulotrichales

Ulotrichacae

Ulothrix variabilis Kuetzing.
A common form in pools and permanent streams. In the pools along the Big Four R. R. it is commonly accompanied by its hormospora form. This seems to be the only species of Ulothrix in this part of the state.
Schizomeris Leibleinii Kuetzing.
Rather rare in streams and ponds. Near Charleston it has been noted in Hodgen's pond, the campus Lily pond and Campus creek. It also occurs in the town branch, near Effingham. Most abundant in the summer and autumn.
Stichococcus bacillaris Naegeli.
The form **confervoideus** is probably common in intermittent streams, pools and swamps in early spring. Fide Collins.
Stichococcus flaccidus (Kuetzing) Gay.
Very common on shaded moist ground. Frequently associated with moss protonemata especially of Funaria and Pottia. Fide Collins.
Stichococcus subtillis (Kuetzing) Klercker.
Abundant in early spring in pools and intermittent streams.
Microspora stagnorum (Kuetzing) Langerheim.
Very abundant in ditches, pools, and intermittent streams in late autumn, during winter thaws, and in early spring. Fide Collins.

Microspora tumidula Hazen.
Found in an aquarium, the material having been collected from Hodgen's pond. Fide Collins.

Cylindrocapsaceae

Cylindrocapsa geminella minor Hansgirg.
Common in the ponds at Charleston and Ashmore. Vegetative material may be seen at all times. Fruiting occurs during June.

Oedogoniaceae

Oedogonium acmandrium Elfving.
Found in aquarium, material from Marshall pond, early spring, 1913. Dimensions slightly larger than those given by Hirn. Each antheridium produces a single sperm!

Oedogonium acrosporum De Barry.
The form **connectens** occurred in Marshall pond during May, 1912.

Oedogonium aster Wittrock.
This form is apparently the rarest of the spiny spored forms. It has been collected at Charleston and Greenup. The Charleston material has dwarf males with two antheridia!

Oedogonium Borisianum (Le Cl.) Wittrock.
Found at Marshall pond north of Charleston in May, 1912.

Oedogonium Boscii (Le Cl.) Wittrock.
Has been collected from the east Big Four pond, and the pond on the campus.

Oedogonium Brauni Kuetz. Pringsh.
Found in the pond just west of Greenup, along the Vandalia R. R.

Oedogonium cardiacum (Hass.) Wittrock.
Not uncommon. Has been recorded from ponds in the vicinity of Charleston, Greenup, Newton and Casey.

Oedogonium cardiacum carbonicum Wittrock.
Rather common in Marshall pond in May, 1912.

Oedogonium concatenatum (Hass.) Wittrock.
Collected at west Big Four pond, Charleston, May, 1911.

Oedogonium crassiusculum idioandrosporum Wittr. & Nordst.
Common in the more permanent ponds. Very irregular in its time of abundance and fruiting. Recorded from Charleston, Casey and Newton.

Oedogonium crassum amplum (Magn. & Wille) Hirn.
I have seen its vegetative filaments among other algae a number of times. It fruited in the east Big Four pond

during October, 1910. During October, 1912, I found it fruiting abundantly among some Azolla plants sent me from the Missouri Botanical Garden, St. Louis.

Oedogonium crenulato-costatum Wittrock.

Collected from the pond on the Normal School campus, and from a pond near Wheeler. In the first locality it was abundant on the crayfish living in the pond. Fruits in summer and autumn.

Oedogonium crenulato-costatum cylindricum Hirn.

Occurred during October, 1910, in the Ice Plant pond at Casey.

Oedogonium crispum (Hassall) Wittrock.

Rather rare. Collected in the pond near Lerna, and the Ice pond at Ashmore, during May, 1912.

Oedogonium cryptoporum vulgare Wittrock.

Found in the Ice pond at Casey and the pond southeast of Lerna.

Oedogonium cyathigerum Wittrock.

This species occurs in Hodgen's and Marshall ponds. Fruits during May, June and July.

Oedogonium echinospermum A. Baun.

Common in the spring of 1912 in wet-weather pools and ponds near Charleston, Ashmore and Oilfield.

Oedogonium Franklinianum Wittrock.

Recorded from Hodgen's pond, Campus pond, and the Tile Factory ponds, Charleston. Fruits in summer and autumn.

Oedogonium globosum Nordtstedt.

Very typical material has been collected from Marshall pond, Charleston and the Lily pond, southeast of Newton. Previously reported from the Hawaian islands and Massachusetts.

Oedogonium gacillimum Wittr. & Lund.

This form is common in ponds and pools. Recorded from Charleston, Dorans, Ashmore and Lerna.

Oedogonium grande Kuetzing.

This is the most common of the Oedogoniums in our streams. It also occurs in the more permanent ponds. It fruits at irregular intervals. It has been collected at Charleston, Greenup, Ashmore, Newton, Lerna and Humbolt in this state; and at Decker, Indiana. There are at least three varieties present in the local waters.

Oedogonium intermedium Wittrock.

This species has been previously known only from Europe. Our material, collected from the Marshall pond, Charleston, and Wolfe's pond, near Wheeler, approaches the form **valida.**

Oedogonium irregulare Wittrock.
This has been previously collected by Wolle in Florida. Here I have observed it only in Hodgen's pond fruiting in September.

Oedogonium macrandrium aemulans Hirn.
Found in the Ice pond, Ashmore, during October, 1912. Has been previously reported from Pennsylvania and California.

Oedogonium Magnusii Wittrock.
Rather common. Recorded from the Tile Factory ponds, railroad pools, Charleston, and the Ice pond, Ashmore. Distinguished by the pitted median membrane of the oospore from others of about the same dimensions. Associated commonly with Oe. rufescens.

Oedogonium multisporum Wood.
Common in small streams, occasionally found in ponds and pools. Usually fruits in May and June. Recorded from Butler's creek and first Tile Factory pond, Charleston, the pond north of Wrightsville, and the railroad pool near Sullivan. Fide Collins.

Oedogonium oblongum Wittrock.
Not previously collected in North America. Here found associated with Confervas in pools along the Clover Leaf R. R. north of Charleston, October, 1910.

Oedogonium obtruncatum Wittrock.
A form evidently belonging here was collected in the east Big Four pond, November, 1912. The dimensions are slightly larger than those given by Hirn for the variety **completum.**

Oedogonium paludosum (Hass.) Wittrock.
Found in the pond near Lerna, in May, 1912. Reported by Wolle, from Pennsylvania.

Oedogonium paludosum parvisporum
Rather common in the remnants of old prairie ponds near Charleston. Fruits in April and May. Not previously reported from America.

Oedogonium plagiostomum Wittrock.
Collected from the middle Tile Factory, and west Big Four ponds near Charleston, during October, 1912. Of special interest is the presence of antheridial filaments. The extremes of the dimensions for the oogonium are slightly larger than those given by Hirn. Known previously only from Sweden and Denmark.

Oedogonium plagiostomum gracilius Wittrock.
Not uncommon during May and June. In addition to the Charleston ponds, I have collected it from the Lily pond, southeast of Newton. The dimensions are near-

est those given for Mexican specimens. Also reported from New York.

Oedogonium Pringsheimii Norstedtii Wittrock.

Has been collected both in spring and fall in small quantities during the past three years. A cosmopolitan species. Known in American from Greenland, Minnesota and California.

Oedogonium propinquum Wittrock.

Fruited during October, 1912, in the middle Tile Factory pond and the east Big Four pond. Our material is nearer the larger dimensions given by Hirn than the smaller. Not previously reported from America.

Oedogonium pseudo-Boscii Hirn.

Rather rare in the remnants of old prairie ponds. Fruits during April and May. Previously reported from Massachusetts. Fide Collins.

Oedogonium pungens Hirn.

Common during May, 1912, in permanent ponds, and pools on the prairie. Distinguished from Oe. echinospermum which also occurs here by its more rounded spores, and the smaller size of its vegetative cells in comparison with the oogonia. Previously reported from South Carolina.

Oedogonium pusillum Kirchner.

Common in ponds and streams. Has been collected on several occasions in fine fruiting condition, ranging from May to September. Not previously reported from America. Fide Collins.

Oedogonium rufescens Wittrock.

The most common of the smaller Oedogoniums. Occurs in ponds and temporary pools during April and May. Previously reported from New England. Fide Collins.

Oeogonium rufescens exiguum (Elfving) Hirn.

Not infrequently associated with the type. Not previously reported from America.

Oedogonium rugulosum Nordstedt.

Collected in May, 1912, from the Ice Plant pond at Ashmore. The oospore walls are very distinctly crenulate. No dwarf males were present in the material. The local specimens belong to the form minutum (Hansgirg) Hirn. Not previously reported from America.

Oedogonium sociale Wittrock.

Common in ponds. Collected once from a stream. Fruits during April and May. Not previously reported from America. Fide Collins.

Oedogonium suecicum Wittock.

Not uncommon in ponds and pools. Fruits during May. Previously reported from Massachusetts.

Oedogonium taphrosporum Nordstedt and Hirn.
Collected in the pond on the Normal School campus, July, 1912. Previously reported from Massachusetts.

Oedogonium tentoriale Nordstedt and Hirn.
Collected from the Tile Factory ponds, October, 1910. The dimensions approach the lower limits given by Hirn. Not known aside from the original station in Brazil.

Oedogonium Vaucherii (Le Cl.) A. Braun.
Common in summer and early autumn in ponds at Charleston and Ashmore. Reported from Massachusetts. Fide Collins.

Oedogonium Wolleanum Wittrock.
Common as scattered filaments among other algae during April and May in ponds. Widely distributed in the United States. Fide Collins.

Bulbochaete Brebissonii Kuetzing.
Abundant in west Big Four pond during May, 1911. Known from Massachusetts and Alaska.

Bulbochaete crassiuscula Nordstedt.
Common in pond southeast of Lerna during May, 1912. Previously known from Greenland and Massachusetts

Bulbochaete intermedia De Bary.
Collected during May, 1912, from Ice pond, Ashmore, and the Tile Factory pond, Arthur. Widely distributed in America.

Bulbochaete minor (A. Braun) Wittrock.
Collected from a pool in a swampy ravine bottom southeast of Decker, Indiana, May, 1911. Has been reported from New Jersey.

Bulbochaete rectangularis Wittrock.
Apparantly common in ponds during May. Reported from Pennsylvania and New England.

Bulbochaete varians Wittrock.
Collected from the pond on the campus, Charleston, and the pond southeast of Lerna, May, 1912. Not previously reported from America.

Bulbochaete varians subsimplex (Wittrock) Hirn.
Collected from the campus pond during October, 1911. Reported from Pennsylvania.

Chaetophoraceae

Microthamnion Kuetzingianum Naegeli.
Common in small streams during autumn and spring.

Microthamnion exiguum Reinsch.
A minute species with cells 1-2 microns in diameter. Collected at Marshall pond, Charleston, April, 1911.

Microthamnion strictissimum Rabenhorst.
Not infrequent in streams during the cooler months of the year.

Chaetosphaeridium globosum (Nordstedt) Klebahn.
Rather common in temporary ponds on submerged seed plants. Early spring.

Chaetophora elegans (Roth) Agardh.
A very common alga in ponds and streams, attaining its largest size and greatest abundance in the prairie ponds, during April and May.

Chaetophora incrassata (Huds.) Hazen.
Very common in pools, ponds and streams. Our largest specimens are less than eight centimeters in length. Usually associated with species of Draparnaldia.

Chaetophora pisiformis (Roth) Agardh.
The only collection containing material that could satisfactorily be placed here came from the Tile Factory pond, Arthur, May, 1912.

Stigeoclonium glomeratum (Hazen) Collins.
Rather common in ponds and pools during March and April.

Stigeoclonium lubricum varians (Hazen) Collins.
Our most abundant species of Stigeoclonium. Usually found in intermittent streams during the period from November to April. Also occurs in ponds, pools and ditches.

Stigeoclonium nanum (Dillw.) Kuetzing.
Recorded from Cut-off of Polecat creek near Ashmore, April, 1912.

Stigeoclonium stagnatile (Hazen) Collins.
Common in ditches and pools in early spring on the prairie.

Stigeoclonium tenue (Ag.) Kuetzing.
Rare in temporary ponds and pools, particularly the remnants of old prairie ponds.

Draparnaldia acuta (Ag.) Kuetzing.
Rare. Specimens that seemed best classified here have been collected from the east branch of Campus creek, and a small stream on the D. B. Miller farm southwest of Casey.

Draparaldia glomerata (Vauch.) Agardh.
Rare. Only recorded from a drainage ditch north of Paris.

Draparnaldia plumosa (Vauch.) Agardh.
This is the commonest species of the genus. It is very abundant in the streams particularly of the forested soils. It is common in the ponds both of the forested

and prairie areas. It is quite variable in form under these various circumstances. Fide Collins.

Draparnaldia Ravenellii Wolle.
Common in old prairie ponds, thus far not seen in the ponds of the upland forested region. It is common, however, in the bottom land ponds of the Wabash river south of Lawrenceville and Vincennes. This very distinct form has been known only from the collection made by Ravenel in South Carolina. The longest specimen noted attained a length of 27 centimeters. Fide Collins.

Pleurococcus vulgaris Meneghini.
Very abundant on slightly shaded rocks, trees and fences. Absent in forests.

Herposteiraceae

Herposterion confervicola Naegeli.
Common in ponds and pools on various filamentous algae.

Coleochaetaceae.

Coleochaete irregularis Pringsheim.
Rather common in temporary ponds. Fruits in late spring and summer.

Coleochaete Nittelarum Jost.
Found on Chara and Nitella in Hodgen's and the east Big Four ponds. Fruits in mid-summer.

Coleochaete orbicularis Pringsheim.
Collected from the pond at the west end of Polk street, Charleston, April, 1912.

Coleochaete scutata Briebisson.
Very common in ponds both permanent and temporary. Have found it fruiting sexually in late May and June.

Siphonocladiales.

Cladophoraceae.

Rhizoclonium hieroglyphicum (Ag.) Kuetzing.
Very abundant in streams and ponds. It is not unusual to find the prairie streams fairly choked with a growth of this alga in May and June. In the ponds it is commonly associated with species of Cladophora. Fide Collins.

Rhizoclonium fontanum Kuetzing.
Rather common in ponds. Have never found it in a branched condition. Occasionally it occurs on the moist soil of pond margins. Fide Collins.

Cladophora glomerata (L.) Kuetzing.
The common species of the streams of eastern Illinois.

Quite variable irrespective of habitat. It usually produces zoospores in spring and early summer, not infrequently also in the autumn. Specimens twenty feet in length have been found in Whetstone creek. Whether these were single plants in the strict sense could not be determined, but they had this appearance. Attached to rocks in a riffle, the long fronds floated down into an adjoining pool. Fide Collins.

Cladophora fracta (Dillw.) Kuetzing. Fide Collins.

Cladophora crispata (Roth) Kuetzing.

I have not been able to separate these two species in the field. If they are distinct they present a hopeless tangle for field study. They have been collected from most of the ponds that are permanent or nearly so. Fide Collins.

Pithophora Varia Wille.

Common in the permanent ponds. Produces akinetes at all seasons and ages of the plants. Fide Collins.

Siphonales.

Vaucheriaceae

Vaucheria geminata (Vauch.) De Candolle.

Vaucheria germitata racemosa (Vauch.) Walz.

Both the species and variety are abundant in the streams, ponds, pools and on moist shaded ground throughout eastern Illinois. Fide Collins.

Vaucheria hamata (Vauch.) De Candolle.

A small form of this species was collected from Polecat creek in the spring of 1911. Fide Collins.

Vaucheria polysperma Hassall.

Found in both the east and west Big Four ponds in the autumn.

Vaucheria sessilis (Vauch.) De Candolle.

Very abundant in all kinds of aquatic habitats. I have never found it growing on moist soil out of doors, though it grows commonly on soil in the greenhouse.

Vaucheria terreseris (Vauch.) De Candolle.

Common on prairie pond margins and shaded soil. Even in these situations it is less abundant than **Vaucheria geminata.**

Rhodophyceae

Batrachospermum Boryanum Sirodot.

Common in the town branch at the eastern edge of Charleston, and in Polecat creek south of Ashmore. I have not seen any fruiting material. Fide Collins.