

PRELIMINARY REPORT OF THE ALGAE OF KENTUCKY.

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After spending a summer in the study of algae at the Franz Theodore Stone Laboratory of The Ohio State University, the writer began an algal survey of the State of Kentucky, under the direction of Dr. L. H. Tiffany, of that institution. This preliminary report is the result of an analysis of collections made during the period August 1, 1928, to June 11, 1929.

Very few, if any, forms of algae have ever been reported from Kentucky. Perhaps algae are as numerous, grow as abundantly, and are as easily collected in Kentucky as in any inland state. Heretofore the men of Kentucky who were interested in the study of algae were not sufficiently interested to make a survey or report of any kind concerning these plants. It is hoped that this preliminary report will be followed by others on the algal flora of the state.

Most of the collections were made in two distinct regions of the state. The first is the Blue Grass Region, where the geological formation is Ordovician and where different bodies of water range from neutral to slightly alkaline (pH 8.4 perhaps being about the highest). The second region is Hart County and some of the adjoining counties. This region has a different soil formation, being the Mississippian. Here the water is slightly acid. In this region the number of collections was very small, but a great many forms of algae were found, especially Desmids. It is thought that when collections can be made at other times of the year and in other parts of the state that many other forms can be added to the list because of the periodicity of the various forms of algae, the types of soil formation and the differences in the reaction of the water.

Several persons have assisted me in this work by sending or bringing collections from their respective communities. The samples were preserved in Transeau's solution, made with 6 parts water, 3 parts alcohol, and 1 part formalin.

Of the 120 counties in the state, only 21 are represented in this report, and only 2 of these are represented by more than

100 forms of algae, and only 6 by more than 10 forms. The highest ranking counties with the number of forms in each are Fayette, 239; Hart, 130; Jessamine, 47; Clark, 29; Larue, 21, and Barren, 17. Of the 373 forms in this report, 263 have been found in only one county, while each of the other 110 have been found in two or more counties.

The genera and species of this report are listed alphabetically under each family represented.

MYXOPHYCEÆ CHROOCOCCEÆ.

CHROOCOCCALES.

Chroococcaceæ.

- Aphanocapsa biformis** A. Braun. Fayette Co. **A. grevillei** (Hassall) Rabenhorst. Fayette Co.
Aphanothece stagnina (Sprengel) A. Braun. Fayette Co.
Chroococcus decorticans A. Braun. Fayette Co. **C. minutus** (Kützing) Nägeli. Fayette Co. **C. turgidus** (Kützing) Nägeli. Fayette Co.
Coelosphaerium dubium Grunow. Fayette Co. **C. kuetzingianum** Nägeli. Fayette Co. **C. naegelianum** Unger. Fayette Co., Hart Co., Jessamine Co.
Gloeocapsa gigas W. & G. S. West. Nelson Co.
Gomphosphaeria aponina Kützing. Hart Co. **G. lacustris** Chodat. Hart Co.
Merismopedia convoluta Brebisson. Carroll Co., Fayette Co., Garrard Co., Hart Co., Hickman Co. **M. glauca** (Ehrenberg) Nägeli. Fayette Co. var. **fontinale** Hansgirg. Hart Co. **M. punctata** Meyen. Barren Co. **M. tenuissima** Lemmermann. Fayette Co.
Microcystis aeruginosa Kützing. Fayette Co. var. **major** (Wittrock) G. M. Smith. Fayette Co., Jessamine Co. **M. flos-aquae** (Wittrock) Kirchner. Fayette Co. **M. marginata** (Meneghini) Kützing. Fayette Co.

HORMOGONEÆ.

HORMOGONEALES.

Oscillatoriaceæ.

- Lyngbya aestuarii** (Mertens) Liebmann. Barren Co., Hart Co., Jefferson Co. **L. birgei** G. M. Smith. Fayette Co. **L. major** Meneghini. Fayette Co., Hart Co. **L. martensiana** Meneghini. Fayette Co. **L. spirulinoides** Gomont. Fayette Co.
Microcoleus vaginatus (Vaucher) Gomont. Fayette Co.
Oscillatoria amphibia Agardh. Barren Co., Fayette Co. **O. annæ** van Goor. Hart Co. **O. chlorina** Kützing. Fayette Co. **O. formosa** Bory. Fayette Co., Jessamine Co. **O. jenensis** G. Schmid. Hart Co. **O. limosa** Kützing. Fayette Co., Hart Co. **O.**

- minnesotensis* Tilden. Fayette Co. *O. ornata* Kützing. Fayette Co. *O. princeps* Vaucher. Barren Co., Clark Co., Fayette Co., Hart Co., Hickman Co., Wolfe Co. *O. sancta* Kützing. Fayette Co., Wolfe Co. *O. splendida* Greville. Fayette Co., Rowan Co. *O. subtilissima* Kützing. Fayette Co. *O. tenuis* C. A. Agardh. Campbell Co., Fayette Co.
- Phormidium ambiguum* Gomont. Fayette Co. *P. autumnale* (Agardh.) Gomont. Fayette Co. *P. laminosum* (Agardh) Gomont. Fayette Co. *P. retzii* (Agardh) Gomont. Fayette Co. *P. uncinatum* (Agardh) Gomont. Fayette Co., Wayne Co.
- Spirulina nordstedtii* Gomont. Wayne Co.

Nostocaceæ.

- Anabaena affinis* Lemmermann. Fayette Co., Hart Co. *A. hallensis* (Janczewski) Bornet & Flahault. Fayette Co. *A. macrospora* var. *robusta* Lemmermann. Fayette Co. *A. planctonica* Brunthaler. Fayette Co. *A. spiroides* Klebahn. Fayette Co., Hart Co. var. *contracta* Klebahn. Fayette Co. *A. torulosa* (Carm.) Lagerheim. Fayette Co.
- Aphanizomenon flos-aquae* (L.) Ralfs. Fayette Co.
- Cylindrospermum alatosporum* Fritsch. Fayette Co. *C. catenatum* Ralfs. Fayette Co. *C. lichenforme* (Bory) Kützing. Fayette Co. *C. muscicola* Kützing. Fayette Co.
- Nodularia harveyana* (Thwaites) Thuret. Clark Co., Fayette Co., Jessamine Co.
- Nostoc comminutum* Kützing. Fayette Co. *N. commune* Vaucher. Fayette Co. *N. microscopicum* Carmichael. Fayette Co. *N. muscorum* Kützing. Fayette Co. *N. piscinale* Kützing. Fayette Co., Jessamine Co.

Scytonemataceæ.

- Scytonema intertextum* (Kützing) Rabenhorst. Fayette Co.

Rivulariaceæ.

- Calothrix fusca* (Kützing) Bornet & Flahault. Fayette Co.
Gloeotrichia echinulata (J. E. Smith) Richter. Hart Co.

CHRYSOPHYCEÆ.

OCHROMONADALES.

Ochromonadaceæ.

- Dinobryon setularia* Ehrenberg. Rowan Co.

RHODOPHYCEÆ FLORIDEÆ.

NEMALIONALES.

Lemaneaceæ.

- Lemanea torulosa* (Roth) Agardh. Fayette Co.

HETEROKONTEÆ.

HETEROTRICHALES.

Tribonemaceæ.

- Tribonema bombycina** (Agardh) Derbes & Solier. Fayette Co., Larue Co., Rowan Co. forma **tenue** Hazen. Fayette Co. **T. raciborskii** Heering. Fayette Co. **T. utriculosa** Kutzing. Fayette Co.

HETEROSIPHONALES.

Botrydiaceæ.

- Botrydium granulatum** (L.) Greville. Fayette Co.

CHLOROPHYCEÆ ISOKONTÆ.

VOLVOCALES.

Chlamydomonadaceæ.

- Chlamydomonas snowii** Printz. Fayette Co.

Volvocaceæ.

- Eudorina elegans** Ehrenberg. Clark Co., Fayette Co., Jessamine Co., Scott Co.
Gonium pectorale Muller. Fayette Co.
Pandorina morum Bory. Clark Co., Fayette Co., Hart Co., Jessamine Co.
Pleodorina californica Shaw. Clark Co., Fayette Co., Hart Co., Jessamine Co. **P. illinoisensis** Kofoid. Fayette Co.
Volvox aureus Ehrenberg. Hart Co. **V. mononæ** G. M. Smith. Clark Co.

CHLOROCOCCALES.

Palmellaceæ.

- Gloeocystis gigas** (Kützing) Lagerheim. Fayette Co.
Planctosphaeria gelatinosa G. M. Smith. Fayette Co.
Sphaerocystis schroeteri Chodat. Fayette Co.
Tetraspora gelatinosa (Vaucher) Desvaux. Clark Co., Fayette Co., Scott Co. **T. lacustris** Lemmermann. Fayette Co. **T. lubrica** (Roth) Agardh. Fayette Co.

Hydrodictyceæ.

- Hydrodictyon reticulatum** (L.) Lagerheim. Clark Co., Fayette Co., Jessamine Co., Washington Co.
Pediastrum biradiatum Meyen. Fayette Co. **P. boryanum** (Turpin) Meneghini. Fayette Co., Jessamine Co. **P. duplex** Meyen. Fayette Co., Hart Co. var. **clathratum** (A. Braun) Lagerheim. Fayette Co. var. **cohaerens** Bohlin. Fayette Co. var. **gracillimum** W. & G. S. West. Fayette Co. var. **reticulatum** Lagerheim.

Fayette Co. **P. kawraiskyi** Schmidle. Fayette Co. **P. ovatum** (Ehrenberg) A. Braun. Fayette Co. **P. simplex** var. **duodenarium** (Bailey) Rabenhorst. Fayette Co., Hart Co., Hickman Co., Jessamine Co., Larue Co. **P. sturmii** Reinsch. Fayette Co. **P. tetras** (Ehrenberg) Ralfs. Clark Co., Fayette Co., Hart Co. var. **tetraodon** (Corda) Hansgirg. Barren Co., Clark Co., Fayette Co., Hart Co.

Chlorococcaceæ.

Characium limneticum Lemmermann. Fayette Co., Garrard Co.
C. stipitatum (Bachmann) Wille. Fayette Co.
Chlorococcum infusionum (Schrank) Meneghini. Fayette Co.

Dictyosphaeriaceæ.

Dictyosphaerium ehrenbergianum Nägeli. Fayette Co. **D. pulchellum** Wood. Fayette Co., Hart Co.
Dimorphococcus lunatus A. Braun. Hart Co.

Autosporaceæ.

Actinastrum gracillimum G. M. Smith. Fayette Co., Garrard Co. **A. hantzschii** Lagerheim. Fayette Co., Hart Co.
Ankistrodesmus falcatus (Corda) Ralfs. Hart Co. var. **mirabilis** (W. & G. S. West) G. S. West. Fayette Co., Garrard Co., Jessamine Co. var. **tumidus** (W. & G. S. West) G. S. West. Fayette Co.
Closteriopsis longissima Lemmermann. Fayette Co.
Coelastrum cambricum Archer. Fayette Co. **C. microporum** Nägeli. Clark Co., Fayette Co., Hart Co.
Crucigenia crucifera (Wolle) Collins. Fayette Co. **C. fenestrata** Schmidle. Fayette Co. **C. quadrata** Morren. Bourbon Co., Fayette Co. **C. rectangularis** (Nägeli) Gay. Fayette Co. **C. tetrapedia** (Kirchner) W. & G. S. West. Fayette Co. **C. truncata** G. M. Smith. Hart Co.
Errerella bornheimensis Conrad. Fayette Co.
Gloeotaenium loitlesbergerianum Hansgirg. Clark Co.
Golenkinia paucispina W. & G. S. West. Hart Co. **G. radiata** Chodat. Fayette Co.
Kirchneriella contorta (Schmidle) Bohlin. Fayette Co. **K. lunaris** var. **irregularis** G. M. Smith. Fayette Co. **K. obesa** (W. West) Schmidle. Fayette Co. var. **major** (Bernard) G. M. Smith. Fayette Co.
Lagerheimia droescheri (Lemmermann) Printz. Fayette Co. **L. longiseta** (Lemmermann) Printz. Fayette Co. **L. subsalsa** Lemmermann. Fayette Co.
Micractinium pusillum Fresenius. Fayette Co. var. **elegans** G. M. Smith. Fayette Co.
Nephrocytium lunatum W. West. Hart Co.
Oocystis borgei Snow. Fayette Co. **O. elliptica** W. West. Clark Co., Jessamine Co., Nelson Co. **O. lacustris** Chodat. Fayette Co. **O. parva** W. & G. S. West. Fayette Co.

- Quadrigula lacustris** (Chodat) G. M. Smith. Jessamine Co.
Scenedesmus abundans (Kirchner) Chodat. Fayette Co. var. **brevicauda** G. M. Smith. Fayette Co. var. **longicauda** G. M. Smith. Fayette Co. **S. acuminatus** (Lagerheim) Chodat. Fayette Co. **S. acutiformis** Schröder. Barren Co., Clark Co., Fayette Co. **S. arcuatus** var. **platydisca** G. M. Smith. Fayette Co. **S. armatus** (Chodat) G. M. Smith. Fayette Co. **S. bernardii** G. M. Smith. Fayette Co. **S. bijuga** (Turpin) Lagerheim. Fayette Co., Hart Co., Jessamine Co. var. **alternans** (Reinsch) Borge. Fayette Co. **S. brasiliensis** Bohlin. Fayette Co. **S. denticulatus** Lagerheim. Fayette Co. **S. dimorphus** (Turpin) Kützing. Fayette Co., Jessamine Co. **S. obliquus** (Turpin) Kützing. Fayette Co., Jessamine Co. **S. opoliensis** P. Richter. Fayette Co., Hart Co. **S. quadricauda** (Turpin) Brebisson. Fayette Co., Hart Co. var. **longispina** (Chodat) G. M. Smith. Fayette Co. var. **parvus** G. M. Smith. Fayette Co. var. **quadrispina** (Chodat) G. M. Smith. Fayette Co., Jessamine Co. var. **westii** G. M. Smith. Fayette Co., Garrard Co.
Schroederia setigera (Schröder) Lemmermann. Fayette Co.
Selenastrum gracile Reinsch. Hart Co. **S. minutum** (Nägeli) Collins. Fayette Co. **S. westii** G. M. Smith. Fayette Co.
Sorastrum spinulosum Nägeli. Clark Co., Fayette Co.
Tetraedron enorme (Ralfs) Hansgirg. Clark Co. **T. limneticum** Borge. Fayette Co. **T. minimum** (A. Braun) Hansgirg. Fayette Co., Garrard Co., Hart Co. **T. pentaedricum** W. & G. S. West. Fayette Co. **T. planctonicum** G. M. Smith. Fayette Co., Hart Co. **T. regulare** Kützing. Fayette Co., Hart Co., Jessamine Co. var. **incus** Teiling. Hart Co. **T. trigonum** (Nägeli) Hansgirg. Fayette Co., Hart Co. var. **gracile** (Reinsch) de Toni. Fayette Co.
Trochiscia aspera (Reinsch) Hansgirg. Fayette Co.

ULOTRICHALES.

Ulotrichaceæ.

- Ulothrix tenerrima** Kützing. Fayette Co. **U. variabilis** Kützing. Fayette Co.
Cylindrocapsa geminella Wolle. Clark Co., Fayette Co.

Pleurococcaceæ.

- Pleurococcus vulgaris** Meneghini. Fayette Co.

Chaetophoraceæ.

- Chaetophora elegans** (Roth) Agardh. Hickman Co.
Draparnaldia acuta (Agardh) Kützing. Pike Co. **D. glomerata** (Vaucher) Agardh. Hickman Co.
Stigeoclonium stagnatile (Hazen) Collins. Fayette Co. **S. subsecundum** Kützing. Garrard Co. **S. tenue** (Agardh) Kützing. Fayette Co.

*Coleochaetaceæ.***Coleochaete scutata** Brebisson. Fayette Co.*Trentepohliaceæ.***Trentepohlia aurea** (L.) Martius. Larue Co.

SIPHONOCADIALES.

*Cladophoraceæ.***Cladophora crispata** (Roth) Kützing. Jessamine Co. **C. fracta** (Dillw.) Kützing. Fayette Co. **C. glomerata** (L.) Kützing. Barren Co., Jessamine Co., Nelson Co. **C. kuetzingiana** Grunow. Garrard Co. **C. uberrima** Lambert. Washington Co.**Pithophora varia** Wille. Clark Co., Fayette Co., Jessamine Co.**Rhizoclonium crassipellitum** var. **robustum** G. S. West. Fayette Co. **R. crispum** Kützing. Fayette Co. **R. hieroglyphicum** (Agardh) Kützing. Bourbon Co., Clark Co., Fayette Co., Washington Co.

SIPHONALES.

*Vaucheriaceæ.***Vaucheria geminata** (Vaucher) de Candolle. Fayette Co., Pike Co., Scott Co. **V. hamata** (Vaucher) de Candolle. Fayette Co. **V. repens** Hassall. Fayette Co. **V. uncinata** Kützing. Carroll Co., Fayette Co.

STEPHANOKONTÆ.

OEDOGONIALES.

*Oedogoniaceæ.***Bulbochaete insignis** Pringsheim. Hart Co.**Oedogonium cardiacum** var. **minus** Lemmermann. Fayette Co. **O. crassiusculum** var. **arechavaletae** (Wittrock) Hirn. Hardin Co. var. **idioandrosporum** Nordstedt & Wittrock. Hart Co. **O. crenulatocostatum** Wittrock. Hickman Co. **O. crispum** var. **gracilescens** Wittrock. Hart Co. **O. gallicum** Hirn. Hart Co. **O. gracillimum** Wittrock & Lund. Hart Co. **O. hirnii** Gutwinski. Hart Co., Hickman Co. **O. illinoisense** Transeau. Hart Co. **O. intermedium** Wittrock. Hart Co. **O. iowense** Tiffany. Hart Co. **O. latiusculum** Tiffany. Clark Co. **O. lautumniarum** Wittrock. Fayette Co. **O. multisporum** Wood. Harrison Co. **O. pachyandrium** Wittrock. Hart Co. **O. plagiostomum** var. **gracilius** Wittrock. Fayette Co., Hart Co. **O. sexangulare** Cleve. Hart Co.

AKONTÆ.

ZYGNEMALES.

Zygnemaceæ.

- Debarya decussata** Transeau. Barren Co.
Mougeotia sphaerocarpa Wolle. Hart Co.
Spirogyra affinis (Hassall) Petit. Fayette Co. **S. communis** (Hassall) Kützing. Fayette Co., Hart Co. **S. condensata** (Vaucher) Kützing. Fayette Co., Jessamine Co. **S. decimina** (Muller) Kützing. Fayette Co. var. **crassior** Gutwinski. Fayette Co. var. **inflata** Fritsch. Fayette Co. var. **plena** W. & G. S. West. Fayette Co. var. **triplicata** Collins. Fayette Co. **S. farlowii** Transeau. Fayette Co. **S. juergensii** Kützing. Fayette Co., Hardin Co., Hart Co., Jessamine Co., Larue Co. **S. lagerheimii** Wittrock. Clark Co. **S. longata** (Vaucher) Kützing. Fayette Co., Jessamine Co., Scott Co. **S. nitida** (Dillwyn) Link. Clark Co., Fayette Co. **S. porticalis** (Muller) Cleve. Fayette Co. **S. protecta** Wood. Jessamine Co. **S. punctata** Cleve. Hart Co. **S. quadrata** (Hassall) Petit. Fayette Co. var. **bifaciata** Kirchner. Clark Co. **S. rivularis** (Hassall) Rabenhorst. Larue Co. **S. singularis** Nordstedt. Harrison Co., Washington Co. **S. stictica** (Eng. bot.) Wille. Jefferson Co. **S. varians** (Hassall) Kützing. Fayette Co., Jessamine Co. var. **minor** Teodoresce. Clark Co., Fayette Co. var. **scrobiculata** Stockmayer. Clark Co., Fayette Co. **S. velata** var. **occidentalis** Transeau. Carroll Co., Fayette Co. **S. weberi** Kützing. Jefferson Co., Jessamine Co.
Zygnema insignis (Hassall) Kützing. Carroll Co. **Z. stellinum** (Vaucher) Agardh. Carroll Co., Fayette Co.

DESMIDIALES.

Mesotaeniaceæ.

- Netrium digitus** (Ehrenberg) Itzingsohn & Rothe. Barren Co.

Desmidiaceæ.

- Arthrodesmus subulatus** var. **subaequalis** W. & G. S. West. Hart Co.
Closterium acerosum (Schrank) Ehrenberg. Fayette Co., Jessamine Co., Larue Co. var. **elongatum** Brebisson. Fayette Co. **C. calosporum** Wittrock. Fayette Co. **C. cynthia** De Not. Jessamine Co. **C. dianæ** Ehrenberg. Fayette Co. **C. didymotocum** Corda. Campbell Co., Hart Co. **C. ehrenbergii** Meneghini. Clark Co., Fayette Co., Hart Co., Jessamine Co., Larue Co. **C. gracile** Brebisson. Fayette Co. **C. intermedium** Ralfs. Campbell Co. **C. juncidum** Ralfs. Hart Co. var. **brevior** Roy. Hart Co. **C. lanceolatum** Kützing. Bourbon Co. **C. leibleinii** Kützing. Fayette Co., Garrard Co., Hart Co., Jessamine Co., Nelson Co. **C. lineatum** Ehrenberg. Hart Co., Jessamine Co. **C. lunula** (Muller) Nitzsch. Fayette Co., Jessamine Co. **C. macilentum** Brebisson. Hart Co. **C. monilliferum** (Bory) Ehrenberg. Bourbon

- Co., Fayette Co., Hart Co., Jessamine Co. **C. parvulum** Nageli. Barren Co. **C. peracerosum** Gay. Fayette Co. **C. praelongum** Brebisson. Fayette Co. **C. pritchardianum** Archer. Fayette Co., Hart Co., Jessamine Co., Wolfe Co. **C. ralfsii** var. **hybridum** Rabenhorst. Pike Co. **C. regulare** Brebisson. Hart Co. **C. rostratum** Ehrenberg. Hart Co. **C. strigosum** Brebisson. Larue Co. **C. striolatum** Ehrenberg. Hart Co. **C. subulatum** (Kützing) Brebisson. Hart Co. **C. venus** Kützing. Fayette Co., Hart Co.
- Cosmarium biretum** Brebisson. Fayette Co., Hardin Co., Harrison Co., Jessamine Co., Larue Co. **C. botrytis** var. **gemmaferum** (Brebisson) Nordstedt. Fayette Co. var. **mediolaeve** West. Fayette Co. **C. broomei** Thwaites. Hart Co., Jessamine Co., Washington Co. **C. calcareum** Wittrock. Fayette Co. **C. commissurale** Brebisson. Hart Co. **C. contractum** Kirchner. Fayette Co., Hart Co. **C. cucumis** (Corda) Ralfs. Fayette Co. **C. fastidiosum** W. & G. S. West. Fayette Co. **C. formulosum** Hoff. Fayette Co. var. **nathorstii** (Boldt) W. & G. S. West. Jessamine Co. **C. granatum** Brebisson. Barren Co., Fayette Co., Hart Co., Jessamine Co., Washington Co. **C. isthmochondrum** Nordstedt. Fayette Co. **C. laeve** Rabenhorst. Clark Co., Fayette Co. **C. margaritatum** (Lundell) Roy & Bliss. Hart Co. **C. meneghinii** Brebisson. Fayette Co. **C. nagelianum** Brebisson. Fayette Co. **C. obtusatum** Schmidle. Barren Co., Hart Co., Larue Co., Washington Co. var. **beanlandii** W. & G. S. West. Jessamine Co. **C. ochthodes** Nordstedt. Hart Co., Larue Co. **C. orthostichum** var. **compactum** W. & G. S. West. Fayette Co. **C. ovale** Ralfs. Hart Co. **C. portianum** Archer. Barren Co., Hart Co. var. **nephroideum** Wittrock. Hart Co. **C. pseudo-broomei** Wolle. Hart Co. **C. pseudoconnatum** var. **ellipsoideum** W. & G. S. West. Hart Co. **C. pygmaeum** Archer. Clark Co., Hart Co., Larue Co. **C. pyramidatum** Brebisson. Hart Co. **C. quadrum** Lundell. Hart Co. **C. regnelli** Wille. Fayette Co., Jessamine Co. **C. reniforme** (Ralfs) Archer. Bourbon Co., Carroll Co., Fayette Co., Jessamine Co., Larue Co. var. **apertum** W. & G. S. West. Clark Co., Fayette Co., Hart Co., Jessamine Co., Washington Co. **C. sexnotatum** var. **tristriatum** (Lutkem) Schmidle. Clark Co. **C. subcrenatum** Hantzsch. Jessamine Co., Washington Co. **C. subnotabile** Wille. Fayette Co. **C. subreniforme** Nordstedt. Hart Co. **C. succisum** West. Hart Co. **C. taxichondrum** Lundell. Hart Co. **C. tetraophthalmum** Brebisson. Hart Co. **C. turpinii** Brebisson. Bourbon Co., Carroll Co., Fayette Co., Harrison Co., Hart Co., Jessamine Co., Larue Co., Washington Co. var. **eximium** W. & G. S. West. Barren Co. **C. ungerianum** var. **subtriplicatum** W. & G. S. West. Larue Co.
- Desmidium aptogonum** var. **acutius** Nordstedt. Hart Co. **D. baileyi** (Ralfs) Nordstedt. Hart Co. **D. cylindricum** Greville. Hart Co. **D. swartzii** Agardh. Hart Co., Hickman Co.
- Euastrum ansatum** Ralfs. Larue Co. **E. denticulatum** (Kirchner) Gay. Hart Co. **E. dubium** var. **anglicanum** (Turner) W. & G. S. West. Hart Co. **E. elegans** (Brebisson) Kützing. Hart Co.

- E. gemmatum** Brebisson. Campbell Co. **E. glaziovii** Borgensen. Hart Co. **E. insulare** (Wittrock) Roy. Hart Co. **E. obesum** Josh. Campbell Co., Hart Co. **E. oblongum** var. **cephalophorum** West. Hart Co. **E. verrucosum** Ehrenberg. Hart Co., Larue Co.
- Hyalotheca dissiliens** (Smith) Brebisson. Hart Co., Rowan Co.
- Micrasterias americana** (Ehrenberg) Ralfs. Hart Co. **M. denticulata** Brebisson. Hart Co. **M. laticeps** Nordstedt. Hart Co. **M. radiata** Hassall. Hart Co. **M. truncata** (Corda) Brebisson. Fayette Co.
- Onychonema laeve** Nordstedt. Hart Co. var. **latum** W. & G. S. West. Hart Co.
- Penium closterioides** Ralfs. Fayette Co., Hart Co. **P. curtum**, forma **major** Wille. Fayette Co. **P. margaritaceum** (Ehrenberg) Brebisson. Barren Co., Fayette Co., Hart Co., Larue Co., Nelson Co. **P. minutum** (Ralfs) Cleve. Hart Co. **P. spirostriolatum** Barker. Hart Co.
- Pleurotaenium coronatum** var. **nodulosum** (Brebisson) West. Hart Co. **P. ehrenbergii** var. **undulatum** Schaarschmidt. Hart Co. **P. trabecula** (Ehrenberg) Nägeli. Campbell Co., Fayette Co., Hart Co., Scott Co.
- Spondylosium secedens** (De Bary) Archer. Hart Co.
- Staurastrum alternans** Brebisson. Fayette Co., Hart Co. **S. anatinum** var. **denticulatum** G. M. Smith. Fayette Co., Jessamine Co. **S. bieneanum** Rabenhorst. Fayette Co., Hart Co. **S. botrophilum** Wolle. Larue Co. **S. chaetoceras** (Schröder) G. M. Smith. Bourbon Co., Fayette Co. **S. cuspidatum** Brebisson. Hart Co. **S. dickiei** var. **circulare** Turner. Hart Co. **S. gladiusum** Turner. Hart Co. **S. manfeldtii** Delponte. Fayette Co. **S. muticum** Brebisson. Fayette Co. **S. paradoxum** var. **parvum** West. Fayette Co. **S. polymorphum** Brebisson. Barren Co., Carroll Co., Clark Co., Fayette Co., Hart Co., Jessamine Co., Larue Co. **S. pseudotetracerum** (Nordstedt) W. & G. S. West. Fayette Co. **S. striolatum** (Nägeli) Archer. Barren Co., Fayette Co., Garrard Co., Hart Co., Jessamine Co. **S. tetracerum** (Kützing) Ralfs. Hart Co.
- Xanthidium antilopaeum** var. **minneapolisense** Wolle. Hart Co. var. **polymazum** Nordstedt. Hart Co. **X. cristatum** Brebisson. Hart Co.

EUGLENINEÆ.

Euglenaceæ.

- Euglena spirogyra** Ehrenberg. Campbell Co.

The following is a summary of all forms found, giving the numbers of species for each of the classes, sub-classes, orders, families, and genera:

MYXOPHYCEAE, 68.			
CHROOCOCCEÆ.....	21	Volvocaceæ.....	7
CHROOCOCALES.....	21	Eudorina.....	1
Chroococcaceæ.....	21	Gonium.....	1
Aphanocapsa.....	2	Pandorina.....	1
Aphanothece.....	1	Pleodorina.....	2
Chroococcus.....	3	Volvox.....	2
Coelosphaerium.....	3	CHLOROCCOCALES.....	95
Gloeocapsa.....	1	Palmellaceæ.....	6
Gomphosphaeria.....	2	Gloeocystis.....	1
Merismopedia.....	5	Planctosphaeria.....	1
Microcystis.....	4	Sphaerocystis.....	1
HORMOGONEÆ.....	47	Tetraspora.....	3
HORMOGONEALES.....	47	Hydrodictyceæ.....	14
Oscillatoriaceæ.....	25	Hydrodictyon.....	1
Lyngbya.....	5	Pediastrum.....	13
Microcoleus.....	1	Chlorococcaceæ.....	3
Oscillatoria.....	13	Characium.....	2
Phormidium.....	5	Chlorococcum.....	1
Spirulina.....	1	Dictyosphaeriaceæ.....	3
Nostocaceæ.....	19	Dictyosphaerium.....	2
Anabaena.....	7	Dimorphococcus.....	1
Aphanizomemnon.....	1	Autosporaceæ.....	69
Cylindrospermum.....	5	Actinastrum.....	2
Nodularia.....	1	Ankistrodesmus.....	3
Nostoc.....	5	Closteriopsis.....	1
Scytonemataceæ.....	1	Coelastrum.....	2
Scytonema.....	1	Crucigenia.....	6
Rivulariaceæ.....	2	Errerella.....	1
Calothrix.....	1	Gloeotaenium.....	1
Gloeotrichia.....	1	Golenkinia.....	3
CHRYSOPHYCEAE, 1.		Kirchneriella.....	4
OCHROMONADALES.....	1	Lagerheimia.....	3
Ochromonadaceæ.....	1	Micractinium.....	2
Dinobryon.....	1	Nephrocytium.....	1
RHODOPHYCEAE, 1.		Oocystis.....	4
FLORIDEÆ.....	1	Quadrigula.....	1
NEMALIONALES.....	1	Scenedesmus.....	20
Lemnaceæ.....	1	Schroederia.....	1
Lemanea.....	1	Selenastrum.....	3
HETEROKONTEAE, 5.		Sorastrum.....	1
HETEROTRICHALES.....	4	Tetraedron.....	9
Tribonemaceæ.....	4	Trochiscia.....	1
Tribonema.....	4	ULOTRICHALES.....	12
HETEROSIPHONALES.....	1	Ulotrichaceæ.....	2
Botrydiaceæ.....	1	Ulothrix.....	2
Botrydium.....	1	Cylindrocapsaceæ.....	1
CHLOROPHYCEAE, 298.		Cylindrocapsa.....	1
ISOKONTÆ.....	130	Pleurococcaceæ.....	1
VOLVOCALES.....	8	Pleurococcus.....	1
Chlamydomonadaceæ.....	1	Chaetophoraceæ.....	6
Chlamydomonas.....	1	Chaetophora.....	1
		Draparnaldia.....	2
		Stigeoclonium.....	3
		Coleochaetaceæ.....	1
		Coleochaete.....	1
		Trentepohliaceæ.....	1
		Trentepohlia.....	1

SIPHONOCLOADIALES.....	11	DESMIDIALES.....	120
Cladophoraceæ.....	11	Mesotaeniaceæ.....	1
Cladophora.....	5	Netrium.....	1
Pithophora.....	1	Desmidiaceæ.....	119
Rhizoclonium.....	5	Arthrodesmus.....	1
SIPHONALES.....	4	Closterium.....	27
Vaucheriaceæ.....	4	Cosmarium.....	42
Vaucheria.....	4	Desmidium.....	4
STEPHANOKONTÆ.....	18	Euastrum.....	10
OEDOGONIALES.....	18	Hyalotheca.....	1
Oedogoniaceæ.....	18	Micrasterias.....	5
Bulbochaete.....	1	Onychonema.....	2
Oedogonium.....	17	Penium.....	5
AKONTÆ.....	150	Pleurotaenium.....	3
ZYGNEMALES.....	30	Spondyosium.....	1
Zygnemaceæ.....	30	Staurastrum.....	15
Debarya.....	1	Xanthidium.....	3
Mougeotia.....	1	EUGLENINEAE, 1.	
Spirogyra.....	26	Euglenaceæ.....	1
Zygnema.....	2	Euglena.....	1

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