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THE O. S. U.
NATURALIST

PUBLISHED BY
THE BIOLOGICAL CLUB OF THE OHIO STATE UNIVERSITY

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THE O. S. U. NATURALIST

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Vol. 1. NOVEMBER, 1900. No. 1.

ANNOUNCEMENT.

In presenting The O. S. U. Naturalist to the public, a few words may not be out of place as to the motives and purposes which were instrumental in bringing it into existence. The Biological Club of Ohio State University is composed of professors, instructors and students of the several departments of natural history in the University. These departments have been carrying on certain lines of work for some time, and the more important and technical has been reported in various publications. Much of the work, however, which is only of local interest, but still of great value in the development of the natural history of the state, has had no convenient avenue of publication. For this reason it was thought advisable to begin a journal in a modest way in which such material together with other articles might be made available for immediate use.

The idea had been entertained for some time that such a course would be desirable. Several members had expressed themselves in favor of a journal, and Dr. Kellerman had for some years contemplated the publication of a purely botanical paper which should be devoted largely to the flora of the state. Finally during the spring of 1900 Mr. Tyler and Mr. Griggs, students connected with the club, began to arouse interest in the matter by advocating the founding of a bulletin which should provide a suitable avenue of publication. By a motion of the club, a committee to consider the matter was appointed, consisting of the following members:

Herbert Osborn,
W. A. Kellerman,
F. J. Tyler,
John H. Schaffner,
Max Morse,
R. F. Griggs.

This committee finally agreed upon a plan, which was presented to the club and adopted, with slight modifications, on the 7th of May, 1900. The editors are elected annually by the club, and following is the staff for the coming year:

Editor-in-Chief—John H. Schaffner, A. M., M. S.

Associate Editors—Zoölogy, F. L. Landacre, B. Sc; Botany, F. J. Tyler, B. Sc.; Geology, J. A. Bownocker, D. Sc.; Archæology, W. C. Mills, B. Sc.; Ornithology, R. F. Griggs.

Advisory Board—Professor W. A. Kellerman, Ph. D., Department of Botany; Professor Herbert Osborn, M. Sc., Department of Zoölogy; Professor J. A. Bownocker, D. Sc., Department of Geology.

The Naturalist, while aiming to be strictly scientific and technical in character, will endeavor to be of especial assistance to the teachers and amateur scientists of the state. It is believed that the kind of work contemplated will be of great educational value.

While The Naturalist is to be devoted especially to the interests of the state, other matter which may from time to time be offered, will not be excluded.

In these days, when specialization is the tendency in all branches of knowledge, we think there is still room for the old-fashioned naturalist who was well versed in a number of sciences.

Whatever one's career may be, we believe that every scientist, and for that matter every person of education, should be a naturalist first and cultivate a broad general sympathy with

nature, and only after that has he a right to become a specialist. No apology need therefore be made for the broad field which THE NATURALIST is to cultivate, and we present it to the public, earnestly soliciting the coöperation of university and college professors, high school teachers, students, and amateurs in the different branches of natural science; and asking that leniency of judgment which such enterprises merit when begun under special difficulties. Finally THE NATURALIST is not intended to be a money-making institution, but it will be improved and enlarged as rapidly as the income from subscriptions and other resources will permit.

J. H. S.

AN OHIO STATION FOR AMPELOPSIS CORDATA.

W. A. Kellerman.

(Plate 1.)

While collecting in Scioto County on the 8th of July, 1900, I was fortunate enough to come across an indigenous specimen of Ampelopsis cordata. [1]The station for the plant is on a hillside one mile east of Portsmouth, Ohio. The character of the environment is indicated in figure 3, Plate 1; the plant in question growing on the bank by the roadside at a point immediately above the bicycle in the central part of the picture. The photograph from which the half tone was made shows only a portion of the high hills that border the Ohio river. The soil is clay and not regarded as very fertile. It is generally the case perhaps that this species grows in "swamps and along river banks," as stated in the manuals, but the ground here is high and dry.

1. Since the MS. for this article was passed to the printer, the locality was again visited and several plants, some of large size, were found further up the hillside.

The published statements as to the distribution of Ampelopsis cordata are not uniform. Riddell, in his synopsis of the Western Flora, says it occurs in the Alleghany Mountains west to Arkansas. Torrey and Gray, in the Flora of North America, Vol. 1, under the name of Vitis indivisa, give its distribution as Southern States west to Louisiana and Arkansas. Wood using the same name in his class-book, says Southern States to St. Louis. In Gray's Manual, last edition, the plant is given under the name of Cissus ampelopsis with the statement that it occurs in Virginia to Illinois and Southward. The occurrence as noted by Britton and Brown in the Illustrated Flora, makes the species still more decidedly southern, namely, southern Virginia to Florida, west to Illinois, Kansas and Texas. Prof. Stanley Coulter, in a Catalogue of the Flowering Plants and Ferns indigenous to Indiana, published in 1899 in the 24th Annual Report of the Department of Geology and Natural Resources of Indiana, says this species occurs "in the central and southern counties of Indiana in swamps and moist woods."

In the fifth edition of Gray's Manual the range of this Ampelopsis (under the name of Vitis indivisa) was given as "West Virginia, Ohio and southward." In answer to an inquiry as to what in the Gray Herbarium was perhaps the basis for the reference to the Ohio distribution, Mr. Merritt L. Fernald kindly wrote me as follows:—"I find in the herbarium a specimen of Cissus ampelopsis marked 'Ohio'. It is one of the old Torrey and Gray specimens and no further data are given."

Dr. Millspaugh lists this species as Cissus ampelopsis in the Flora of West Virginia and adds on the authority of Mertz and Guttenberg that it also occurs in Ohio, near Wheeling. Upon inquiry of Supt. Mertz, I learn that his notes of work upwards of twenty years ago contain no mention of this species at Wheeling, West Virginia, or at Bellaire, Ohio. He further informs me that what was taken for this Ampelopsis at Bellaire was probably Vitis cordifolia, three forms of which were found growing on the islands of the Ohio River near Wheeling. Of these he adds in a letter to the writer, "I think we probably decided that one was V. indivisa; but I feel sure that it was not and you are probably the first to find it in Ohio."

It will be observed that the distribution as noted by Professor Stanley Coulter extends its range still further northward than my Ohio station. It is likely that its occurrence still further northward in Ohio may be detected by assiduous collectors.

I wish to say a word concerning the ornamental character of this native vine. The foliage is bright green and very handsome. A figure of a single leaf is shown in Plate 1, figure 2. This is

reduced from a photograph taken with the leaf itself used as a negative. I have never detected a fungous attack or insect depredation on the leaves. The small dull-colored bluish fruits in loose panicles when abundant are somewhat ornamental. The vine is a vigorous grower and clings firmly to supports. Figure 4 shows a plant used for ornamental purposes growing on the south side of the Botanical Building at the Ohio State University. A figure from a still more vigorous specimen was shown by Mrs. Kellerman in Vick's Magazine, January, 1900. This was made from a photograph of a specimen growing at the north porch of a residence in Columbus, Ohio. The same has been reproduced by Dr. Halsted in Bulletin No. 144 of the New Jersey Experiment Station. The species can be transplanted readily. One of the plants just referred to was dug up in June in Linn County, Kansas, and easily survived its rough treatment. Roots were taken from the Portsmouth plant in July this year and they are now growing and producing stems. We have repeatedly transplanted specimens that were grown from roots and from cuttings in the green house and always with success.

A word as to the synonymy should perhaps be given. The species was described by Michaux in 1803 under the name of Ampelopsis cordata. Persoon in 1805 proposed the name Cissus ampelopsis for the species. It was unfortunate that he did not retain the specific name, cordata; for there seems to have been no need of discarding that part of its name even if the genus had been originally misapprehended. Had he followed the most commendable usage of the modern systematists, he would have published the name in this form: Cissus cordata (Mx.) Pers. In 1811 Wildenow published the name as Vitis indivisa and here as before unnecessarily a new specific name was given. Many authors have regarded the plant as a Vitis rather than an Ampelopsis or a Cissus. We rely, however, on Dr. Britton's authority and use the name Ampelopsis cordata, relegating the other names to synonymy.

KELLERMAN ON AMPELOPSIS CORDATA

Explanation of Plate 1.—Ampelopsis cordata. Figure 1: A herbarium specimen of twigs in fruit, from a photograph. Figure 2: A single leaf and tendril after a photograph direct from the same, reduced by the engraver. Figure 3: View of the station for the indigenous specimen at Portsmouth, Ohio; the Ampelopsis is in the center of the picture immediately above the bicycle. Figure 4: View of a plant growing on the south wall of the Botanical Building, Ohio State University; to the right of the door a portion of a Japan Ivy is seen.

THE BAUM PREHISTORIC VILLAGE SITE.

W. C. Mills.

The field work of the Ohio State Archæological and Historical Society was completed August 18. The explorations were a continuance of last year's work at the Baum Prehistoric Village Site, which is situated in Ross County, Ohio, just across the river from the small village of Bourneville, and is located upon the first gravel terrace of the Paint Creek Valley. The village site surrounds a large pyramidal mound which was examined a number of years ago under the direction of the Smithsonian Institution of Washington. A complete report of the explorations is found in the 12th Annual Report of the Bureau of Ethnology, 1890-91. At this time the village site was not explored but it was known to exist, as the following extract from the 12th Annual Report will show: "This mound is situated upon the edge of the first general bottom of Paint Creek, which though protected by a huge levee is annually inundated. In overflow times the smaller circle of the adjoining enclosure is almost entirely submerged, and the summit of the mound is the only land visible above a broad expanse of water. Around the mound upon all sides, particularly to the east, are traces of former Indian occupation. Numerous fragments of pottery similar in fabrication and ornamental feature to those found in the mound bestrew the plowed ground. These were intermingled with the valves of mussel shells, pitted stones, shell disks, human bones, arrowheads, pieces of perforated stone gorgets, and a large quantity of chipped flint." Directly north of this village site, about one mile distant is the noted hill top enclosure known as Spruce Hill, which overlooks the valley of Paint Creek for many miles north and south. The hill on which this enclosure is situated is about 500 feet high, and is a long narrow spur projecting from the tableland and extending to the south.

The wall of this enclosure is composed entirely of boulders and broken pieces of sandstone which had been collected along the margin of the summit of the hill. These sandstones are the result of disintegration of the sandstone strata which is near the surface on the hill top. Directly east from the village site, a little more than 1300 feet, is what is known as the Baum works, which was surveyed by Squier & Davis in 1846. They described this work as the best preserved, and possessing gateways that are wider than those of any other earth-works found in this valley. They also made a survey of the mound which is situated in this village site and they described it as a large, square, truncated mound, with a base of 120 feet and having a flat top, with an area 50 feet square. The mound at that time being 15 feet high. They also say that quantities of coarse broken pottery were found on and around the mound. Thus it will be seen that the early investigators found pottery surrounding the mound and later explorations by the Smithsonian Institution show that the broken pieces of pottery found on the surface surrounding the mound were very much like the pottery found in the mound and placed with the buried dead therein.

The object of the investigations carried on by the Archæological and Historical Society is to show the connection between the occupants of the prehistoric village and those who built the mound. This has been done by carefully comparing the contents of this village site with the contents of the mound as reported by the Smithsonian Institution. So far, all of the pottery and implements of bone, stone, and shell that were buried in this mound, have been duplicated in great numbers from the refuse heaps, burials, and ash pits found in the village. The village entirely surrounds the mound, but on the east it is more extensive and occupies upward of five acres of ground.

The work of examining the village site is very laborious. Every portion or particle of the earth to a depth, on the average, of two and one-half feet is carefully dug over with small hand trowels, and every particle of bone, shell or stone is carefully removed and examined. The

contents of the ash pits are screened so that no implements or ornaments may be lost. The whole village site is platted, laid off in sections thirty-six feet square, which square is again laid off into sections four feet square. In this way every find is carefully located upon the map. This year the work was conducted east and north-east of the mound. Here the post-molds of their little tepees were found in abundance. Their fire-places usually were placed just outside of the tepees, and their refuse pits near at hand, and near by we found the burials. A series of photographs, showing the manner of burial and the close proximity of the burials to the ash pits and tepees, were carefully made. At one time seven skeletons were exposed within an area of fifteen feet square. Within this space two ash pits were found and one row of the post-molds, showing the relation of the little home to the burial ground. The manner of burial is shown by the photographs taken of the seven skeletons exposed at one time, showing that they had no definite manner of placing the bodies, as some were buried at right angles to each other, some were placed at full length, and lying upon the back, while others were placed upon the side; in still other cases the body was evidently doubled up and then buried. A great number of skeletons of babies were found in the ash pits, showing that the already dug ash pit was the most convenient grave for the little ones, who was then covered with ashes, consequently the skeletons were perfectly preserved. With a great number of the adult skeletons were found implements of bone, such as awls, hoes, celts, arrow and spear points of stone, beads and ornaments of shell and bone; but with the skeletons of children varying in age from four to twelve years were found the greatest number of ornaments made of shell and bone. In one instance a large gorget made from the marine univalve Strombus gigas about two and one-half inches in diameter, was found upon the skeleton of a child six years of age. In another more than two hundred beads and ornaments of shell and bone were found upon the skeleton of a child not over seven years of age. In another grave a child not over four years of age had buried with it, what at one time was no doubt, a necklace made of elk teeth, perforated for attachment. In two instances the graves of children were carefully covered over with slabs of slate. With those children whose graves were carefully covered no implements or ornaments of any sort were placed. Of the sixty-three skeletons found, not a single perfect piece of pottery was found buried with them, differing greatly from the Madisonville Prehistoric Cemetery near Cincinnati, for at the latter cemetery quantities of pottery in their perfect state was found, buried with the skeletons. The pottery, implements and ornaments at Madisonville can be readily dedicated from the village at Paint Creek.

In the ash pits can be found specimens showing the masterpieces of art wrought in stone, bone and shell, representing the civilization which at one time inhabited this village. Of the bone implements, the needle, made from the bones of the deer and elk is most beautiful in design, at the same time showing the skill displayed in the manufacture of the implements. Some of them are upward of nine inches in length. Of the bone specimens perhaps the bead is the commonest. In some pits more than two hundred have been taken out. In these ash pits were also found well wrought specimens of aboriginal fish hooks, also specimens showing the various stages of manufacture of this implement, which differs somewhat from the manufacture of those found at Madisonville, a full account of which appears in the 20th Annual Report of the Trustees of the Peabody Museum of Harvard University, by Prof. F. W. Putnam, in which he fully describes the manufacture of the fish hooks found in the prehistoric village site. In no instance was an unfinished specimen found in the Baum Village which would, in any way, show that a hole was first bored through the bone and the fish hook then wrought from this hole as was shown by Prof. Putnam; on the contrary a piece of bone was selected and cut into shape representing a small tablet of bone two and one-half inches long by from one-half to three-quarters of an inch broad, with rounded edges at the ends. The center was then cut out by rubbing with a stone on each side. So that two fish hooks were made instead of one from the single piece of bone. A great many perfect scrapers made from the metacarpal bone of the deer and elk were also found, while almost every pit would contain from one to four broken halves of these scrapers. Specimens were also procured showing the various stages in the manufacture of this implement which resemble very much in every particular those found at Madisonville, and also those found at the village site at Fort Ancient.

The pottery fragments found in these ash pits resemble those found at Madisonville, in the ornamentation by incised lines, implement indentations arranged in figures, and handles ornamented with effigies of birds and animals. Of the shell implements, perhaps the most common is the shell hoe, which is made from the mussel shell *Unio plicatus*.

A great number of beads, from one-half to one inch in diameter, made from mussel shells and perforated with from one to three holes, are found. The large gorgets from two to two and one-half inches in diameter are also found. These are invariably perforated with from one to three holes, and are made from a shell foreign to the Paint Creek Valley.

Of the implements and ornaments made of stone, the flint arrow heads are very common. These are mostly made from material brought from flint ridge in Licking County. Grooved axes are also found, the type prevailing is the one having the groove extend entirely around. The perforated gorgets of slate are also found, but the most interesting of the stone implements found in the pits are the perforated discoidals. These are all small, varying in diameter from two to three inches, and finely polished.

In the refuse heaps and ash pits were found the bones of the animals used for food, charred corn, hickory nuts, walnuts, butter nuts, acorns, hazel nuts, beans, seeds of the papaw, wild plum, etc. About thirty-five per cent. of the bones taken from these pits were of the Virginia deer. The bones of the black bear, raccoon, elk, ground-hog, wild-cat, muskrat, squirrel, beaver, wild turkey, wild duck, wild goose, trumpeter swan, great horn owl, barred owl, were found in abundance. But perhaps the most interesting of the animal bones found were those of the Indian dog. Skulls and parts of skeletons were taken from the pits in great numbers. Professor F. W. Putnam, of Harvard University, who has been making a study of the skulls of the dog taken from the mounds and burial places of Florida, Georgia, South Carolina, Ohio, Kentucky, New York, and from the great shell heaps in Maine, says that a distinct variety or species of dog was distributed over North America in pre-Columbian times, and by comparison he finds that the dog found in America is the same variety of dog found in the ancient site of the Swiss Lake dwellers, and also in the ancient tombs of Thebes in Egypt, and claims that the variety of the pre-Columbian dog is apparently identical with the pure breed Scotch collie of today, while Mr. F. A. Lucas, of the U. S. National Museum, describes the dog found in the Baum Village as resembling very much the bull terrier in size and proportion, and states that the same species have been found in the village sites in Texas and the old Puebloes.

A FOLIICOLOUS FORM OF SORGHUM SMUT AND NOTES ON INFECTION EXPERIMENTS.

W. A. KELLERMAN.

(Plate 2.)

On January 1st, 1900, several pots in the Botanical greenhouse of the Ohio State University were planted to sorghum, Kaffir corn, maize, sweet-corn and pop-corn. The seeds were previously moistened and mixed with a large quantity of head-smut of sorghum taken from smutted sorghum plants also from maize infected with the same fungus. This species was named *Ustilago reiliana* by Kühn in 1868 from specimens collected in Egypt.

The plants developed rapidly and normally, though the stems were slender and did not reach the normal height. The panicles appeared early and only in a comparatively few cases showed infection.

In one case an anomalous specimen appeared, namely, a sweet corn plant with the upper leaves as well as the panicle infected. This form therefore differs from the type in being in part foliicolous and may be designated as *Ustilago* (*Cintractia*[2]) *reiliana* forma *foliicola* nov. for. Figures 1 and 2, Plate 2, show the appearance of the infected plant, the one representing an earlier and the other a later stage of the emergence of the smut mass.

2. Mr. G. P. Clinton regards this fungus as a Cintractia rather than an Ustilago.

It may be remarked further that I have repeatedly tried seed inoculation experiments, mostly in the greenhouse but also occasionally in the field.

In the latter case in the summer of 1900, I obtained from a plot of many hundred stalks including field-corn, sweet-corn, pop-corn, sorghum, Kaffir corn and broom corn only three cases of smutted plants. These were of sweet-corn, both the tassel and ear being affected. The previous year about the same per cent. of successful inoculations were obtained. But in the greenhouse the experiments have uniformly resulted in the production of a considerable number of smutted stalks of sorghum and occasionally an infected plant of maize. These have for the most part been reported in print, the first account appearing in Bulletin No. 23, Kansas Experiment Station, in the year 1891.

I have now growing in the botanical greenhouse three sets of sorghum plants raised from seeds planted January 1, 1898, January 1, 1899, and January 1, 1900. Only the plants have been retained which showed successful inoculation experiments. They have been shifted to larger pots from time to time, but the plants make only a stunted growth. The new stalks that appear now and then are invariably affected, though sometimes one of the panicles, either the one terminating the main stem or one of the side branches may be free from visible smut. It is thus evident that this species of smut is perennial where its host lives from year to year. Figure 3 shows a photograph of one of the plants started in the greenhouse in 1899, its first stem producing an infected panicle. Figure 4 shows a plant grown in 1900, the first or central panicle not exhibiting the smut, but later when panicles from the side branches appeared, they were seen to be smutted.

It seems that another experimenter, whom I will quote, has succeeded scarcely as well. Mr. G. P. Clinton, the assistant Botanist of the Illinois Experiment Station, Urbana, Illinois, in Bulletin No. 57 (March, 1900) reports as follows: “Apparently from the experiments of Kellerman,

infection takes place through the germinating seed, though the per cent. of infection he produced was rather small. In ’98 field experiments were conducted here with a view of infecting the Orange variety of sorghum with this smut. In one case the seed was mixed with an abundance of spores and in others these spores were sprayed in water or manure water on the young parts of the plants when about six inches high. In none of the several hundred plants that matured was any sign of the smut found. It is very likely that the variety used may have had something to do with the negative results, as it was not the same from which the smut was taken.”

The head-smut of sorghum is not to be confused with another species that occurs on the same host. The one now referred to is a grain-smut, that is, the panicle as a whole is not included, but the individual grains become smutted. This species has been called *Ustilago sorghi*, but Mr. Clinton regards it as a Cintractia, namely, *Cintractia sorghi-vulgaris* (Tul.) Clint. It is more common than the former, occurring often on sorghum and broom corn.

The head-smut of sorghum, *Ustilago* or *Cintractia reiliana*, was first found in this country by Prof. J. T. Willard at Manhattan, Kansas, in 1890, in a plot grown for purposes of chemical investigation. The same year it was detected by Dr. Halsted in New Jersey. I found it in Ohio in 1897 and it is now reported for Illinois by Mr. Clinton. In all these cases it occurred only on sorghum, but Prof. Hitchcock has reported it as not uncommon on maize in fields about Manhattan, Kansas.

Plate 2: KELLERMAN ON SORGHUM SMUT.

Explanation of Plate 2.—Ustilago or Cintractia reiliana. Figure 1: The foliicolous form occurring on sweet-corn, the panicle not yet emerged, but the smut on upper leaves in sight. Figure 2: Same as in Figure 1, showing a later stage of maturity. Figure 3: An infected sorghum plant in the greenhouse, photographed in 1899, the panicle smutted. Figure 4: An infected sorghum plant, grown in the greenhouse in 1900, the central panicle sound, the later (side) panicles smutted.

A LIST OF HEMIPTERA COLLECTED IN THE VICINITY OF BELLAIRE, OHIO.

Herbert Osborn.

The following record of species represents the collections of Hemiptera made during four days (Aug. 28, Sept. 1, 1900) at points within five miles of Bellaire, all on the Ohio side of the river. Wooded hillsides, valleys, creek bottoms and shore and island of the river were worked during a part of each day and as the list includes one hundred and forty-nine species, it is probably fairly representative for the common species of the season.

HOMOPTERA.

Cicadidæ. Cicada tibicen L. One specimen found dead.

Membracidæ. Entilia sinuata Fab., Publilia concava Say, Ceresa diceros Say, Ceresa bubalus Fab., Thelia bimaculata Fab., Acutalis calva Say, Vanduzea arcuata Say.

Fulgoridæ. Scolops sulcipes Say, Scolops sp., Ormenis pruinosa Say, O. septentrionalis Fab., Amphiscepa bivittata Say, Bruchomorpha dorsata Fh., B. oculata Newmn., Issus? sp. Pissonotus ater VanD., Stobera tricarinata Say, Stobera sp., Liburnia campestris VanD., L. ornata Stal, Liburnia sp.

Cercopidæ. Lepyronia 4-angularis Say, Clastoptera obtusa Say, C. proteus Fh., C. xanthocephala Germ.

Bythoscopidæ. Macropsis apicalis O. & B., Agallia sanguinolenta Prov., A. 4-punctata Prov., A. constricta VanD., A. novella Say, Idiocerus pallidus Fh., I. snowi G. & B., I. verticis Say.

Tettigonidæ. Aulacizes irrorata Fab., Tettigonia bifida Say, T. tripunctata Fh., T. gothica Sign., T. hartii Wdw. (mss), Diedrocephala coccinea Forst., D. mollipes Say, Helochara communis Fh., Gypona octolineata Say.

Jassidæ. Xestocephalus pulicarius VanD., X. tessellatus VanD., Platymetopius acutus Say, P. frontalis VanD., Deltocephalus sayi Fh., D. sylvestris O. & B., D. apicatus Osb., D. weedi VanD., D. obtectus O. & B., D. inimicus Say, D. flavicosta Stal, D. nigrifrons Forbes, Scaphoideus immistus Say, S. auronitens Prov., S. scalaris VanD., Athysanus curtisii Fh., A. (Limotettix) exitiosa Uhl., Athysanella acuticauda Bak., Lonatura catalina O. & B., Eutettix seminudus Say, Phlepsius irroratus Say, P. decorus O. & B., Thamnotettix clitellarius Say, Chlorotettix unicolor Fh., C. galbanata VanD., Jassus olitorius Say, Cicadula 6-notata Fall., C. punctifrons Fall., Gnathodus punctatus Thunb., G. abdominalis VanD., Empoasca smaragdula Fall., E. obtusa trifasciata Gill., E. mali LeB., Dicraneura flavipennis Fab., Typhlocyba comes vitis Harr., T. comes basilaris Say, T. comes comes Say, T. c. ziczac Walsh, T. obliqua Say, T. vulnerata Say, T. tricinta Fh., T, trifascaita Say, T. querci bifasciata Gill., T. hartii Gill.

Aphididæ. Pemphigus populi transversus Riley, On Cottonwood.

Aleyrodidæ. Aleurodes sp. Abundant on Sycamore leaves.

Coccidæ. Chionaspis salicis Harr.

HETEROPTERA.

Cydnidæ. One specimen as yet undetermined.

Pentatomidæ. Podisus cynicus Say, Brochymena annulata Fab., Cosmopepla carnifex Fab., Euschistus fissilis Uhl., E. tristigma Say, E. variolarius P. Beauv., Trichopepla semivittata Say, Thyanta custator Fab.

Coreidæ. Neides muticus Say, Jalysus spinosus Say, Corizus lateralis Say, C. nigristernum Sign., C. bohemani Sign., (?) C. noveboracensis Sign.

Lygaeidæ. Nysius thymi Wolff, N. angustatus Uhl., Orsillacis producta Uhl., Ischnorhynchus didymus Zett., Blissus leucopterus Say, Cymus angustatus Stal. Geocoris limbatus Stal, G. fuliginosus Say, Myodocha serripes Oliv., Ligyrocoris sylvestris L., Ptochiomera nodosa Say, Lygaeus kalmii Stal, L. turcicus Fab.

Capsidæ. Megalocoerea debilis Uh. (?), Miris affinis Reut., Compsocerocoris annulicornis Reut., Calocoris rapidus Say, Lygus pratensis L., L. plagiatus Uhl., Poecyloscytus basalis Reut., Camptobrochis nebulosus Uhl., Eccritotarsus elegans Uhl., Hyaliodes vitripennis Say. Episcopus ornatus Uh., Ilnacora stalii Reut., Pilophorus bifasciatus Fab, Malacocoris irroratus Say, Garganus fusiformis Say, Halticus uhleri Giard, Styphrosoma stygica Say, Neoborus laetus Uhl., Plagiognathus obscurus Uhl., Plagiognathus sp., Agalliastes associatus, Uhl.

Acanthiidæ Triphleps insidiosus Say.

Tingitidæ. Corythuca ciliata Say.

Phymatidæ. Phymata fasciata Gray.

Nabidæ. Coriscus ferus L.

Reduviidæ. Sinea diadema Fab., Acholla multispionosa DeG., Diplodus luridus Stal.

Hygrotrechidæ. Hygrotrechus remigis Say, Stephania picta H. Schf.

Saldidæ. Salda interstitialis Say.

Corisidæ. Corisa alternata Say.

Of the above list nearly thirty have not been recorded for the state hitherto and there are a few specimens which are as yet undetermined.

ADDITIONS AND CORRECTIONS TO THE "ODONATA OF OHIO."

JAMES S. HINE.

Since the publication of the Odonata of Ohio, there have been several species of dragonflies added to the State list, and we have had reasons to change our minds regarding the identity of two species at least.

Enallagma Fischeri, Kellicott, is a synonym of Agrion antennatum, Say, consequently the species will henceforth be known as Enallagma antennatum, Say.

Our Gomphus lividus, Selys, is Gomphus sordidus, Selys, and Gomphus externus, Selys, is Gomphus crassus, Hagen.

The following species have been added:

1. Lestes eurinus, Say, taken June 3, 1900, by E. B. Williamson in Portage County. Numbers of both males and females of the species were taken on Cedar Point, at Sandusky, July 10 of the present year.

2. Progomphus obscurus, Ramb., first taken at Ironton, June 1, 1899, by R. C. Osburn. The present year I took several specimens at Vinton, June 10th.

3. Gomphus abbreviatus, Hagen, (?) was taken at Loudonville, June 10, 1899, by J. B. Parker and R. C. Osburn. The species was common at the same locality June 14, of the present year.

4. Neurocordulia obsoleta, Say, has been taken at Cincinnati by Chas. Dury and his associates for three consecutive seasons.

5. Neurocordulia yamaskanensis, Prov., was procured on Rattlesnake Island in Lake Erie, June 28, 1900, by Prof. Osborn.

6. Nasiæschna pentacantha, Rambur, was taken near Kent, Ohio, June 21, 1900. In company with R. C. Osburn we procured three pairs of this species. Others were seen.

DRAGONFLIES TAKEN IN A WEEK.

Raymond C. Osburn and James S. Hine.

During the week beginning June 17th, we collected insects and fishes in the region of small lakes near Kent, Ohio. A list of the Odonata taken during that week is interesting, as it shows the richness of the Odonat fauna of north-eastern Ohio and also the number of species of this group that may fly in a certain locality at the same time.

1. Calopteryx maculata, Beauv.
2. Calopteryx æquabilis, Say.
3. Hetærina americana, Fabr.
4. Lestes uncatus, Kirby.
5. Lestes rectangularis, Say.
6. Lestes vigilax, Hagen.
7. Lestes inequalis, Walsh.
8. Argia putrida, Hagen.
9. Agria violacea, Hagen.
10. Argia tibialis, Rambur.
11. Argia apicalis, Say.
12. Erythromma conditum, Hagen.
13. Nehalennia posita, Hagen.
14. Nehalennia irene, Hagen.
15. Amphiagrion saucium, Burm.
16. Enallagma traviatum, Selys.
17. Enallagma civile, Hagen.
18. Enallagma carunculatum, Morse.
19. Enallagma hageni, Walsh.
20. Enallagma geminatum, Kel.
21. Enallagma exsulans, Hagen.
22. Enallagma antennatum, Say.
23. Enallagma signatum, Hagen.
24. Enallagma pollutum, Hagen.
25. Ischnura verticalis, Say.
26. Ophiogomphus rupinsulensis, Walsh.
27. Gomphus dilatatus, Rambur.
28. Gomphus quadricolor, Walsh.
29. Gomphus fraternus, Say.
30. Gomphus furcifer, Hagen.
31. Gomphus spicatus, Selys.
32. Gomphus sordidus, Selys.
33. Gomphus exilis, Selys.
34. Dromogomphus spinosus, Selys.
35. Anax junius, Drury.
36. Basischna janata, Say.
37. Epiæschna heros, Fab.
38. Æschna verticalis, Hagen.
39. Nasiæschna pentacantha, Rambur.
40. Macromia illinoiensis, Walsh.

41. Epicordulia princeps, Hagen.
42. Tetragoneuria cynosura, Say.
43. Tetragoneuria semiaqua, Burm.
44. Tramea lacerata, Hagen.
45. Libellula basalis, Say.
46. Libellula pulchella, Drury.
47. Libellula semifasciata, Burm.
48. Libellula exusta, Say.
49. Libellula incesta, Hagen.
50. Plathemis trimaculata, DeGeer.
51. Celithemis eponina, Drury.
52. Celithemis elisa, Hagen.
53. Celithemis fasciata, Kirby.
54. Leucorhinia intacta, Hagen.
55. Sympetrum rubicundulum, Say.
56. Perithemis domitia, Drury.
57. Mesothemis simplicicollis, Say.
58. Pachydiplax longipennis, Burm.

Number 2 was taken for the second time in the State. The species was common along the Cuyahoga River, where both males and females were found resting on foliage near the water's edge or flitting nervously from one resting place to another.

Number 27 is one of our rarer Gomphids. Only one specimen of the species was taken.

Both male and female of 30 were taken. This is the first time the female of this species has been taken in Ohio.

Number 39 was taken for the first time in Ohio. Three pairs of this fine species were taken.

Two years ago I took males of number 48 at Stewart's Lake. The species has not been taken in the State since until this year when we took both males and females at the same lake.

Number 53 has been considered a very desirable species, but it seems that it is a common form in the lake region near Kent. About thirty specimens were procured.

ADDITIONS TO THE OHIO FLORA.

The Fourth State Catalogue of Ohio Plants published in April, 1899, by Kellerman, contained 2025 species of Cormophytes. In the first Annual Supplement, published April, 1900, 69 additions were made. The following 22 additional species therefore bring the total to 2116 plants growing without cultivation in the state. The numbers correspond to the Fourth State Catalogue so that those who desire can easily copy the additions and bring their catalogue up to date.

212a Bouteloua hirsuta Lag. Hairy Mesquite-grass. Ohio State University Campus, Columbus. F. J. Tyler.

212b Bouteloua oligostachya (Nutt.) Torr. Mesquite-grass. Ohio State University Campus, Columbus. Alice Dufour.

258a Bromus asper Murr. Hairy Brome-grass (London, Mrs. K. D. Sharp, Coll., E. Monroe, Highland Co., W. A. Kellerman, Coll.) Alice Dufour.

265b Bromus breviaristatus (Hook.) Buckl. Short-awned Chess. Ashtabula, (W. A. Kellerman, Coll.) Alice Dufour.

472a Wolffia braziliensis Wedd. Brazil Wolffia. Sandusky Bay. Abundant at times. R. F. Griggs.

538a Convallaria majalis L. Lily of the Valley. Abundantly escaped in Cemetery, Worthington. R. F. Griggs.

619a Salix nigra x amygdaloides. A. D. Selby, 8th Report Academy of Science, p. 22, and others.

629 Change S. fluviatilis Nutt, to S. interior Rowlee. Rowlee in Bull. Torr. Bot. Club. 27: 247, 1900.

629a Salix interior var. wheeleri Rowlee. Cedar Point, W. A. Kellerman and R. F. Grigs.

636a Salix sericea x cordata. Ashtabula. (W. A. Kellerman Coll.) R. F. Griggs.

637a Salix peliolaris var. graciles. Toledo. (J. A. Sanford, Coll. 1879.) R. F. Griggs.

638a Salix candida x cordata. Castalia, Erie County. R. F. Griggs.

864a Berberis aquilifolium. Pursh. (Mahonia aquilifolium Nutt.) Seeding in Cemetery, Worthington. R. F. Griggs.

898b Diplotaxus muralis (L.) DC. Diplotaxus. Cleveland, Ohio. Wm. Krebs.

963 Philadelphus inodorus L. Mt. Pleasant, Jefferson County. W. A. Kellerman.

1039a Cratægus cordata (Mill.) Ait. Washington Thorn. Steubenville, Ohio. H. N. Mertz.

1045a Cratægus multipes n. sp. (W. W. Ashe in Bulletin 175 N. C. Experiment Station, August, 1900.) Ohio, E. E. Bogue, Coll.

1132a Dolichos lablab L. Hyacinth Bean. Escaped from cultivation in several places in Columbus. Found growing on vacant lots, surrounded by large weeds. John H. Schaffner.

1188a Rhus cotinus L. Escaped, Mt. Pleasant, Jefferson County. W. A. Kellerman.

1219a Ampelopsis cordata Michx. Scioto County. Previously reported for Ohio. W. A. Kellerman.

1255 Lechea minor L. Steubenville, Ohio. H. N. Mertz.

1487a Gilia coronopifolia Pers. Growing in a cemetery near Madison, Lake County. Spreading slowly. F. J. Tyler.

1729 Euphorbia lathyris L. Pomeroy, Meigs County. W. A. Kellerman.

1919a Polymnia canadensis var. radiata Gray. Cedar Point. Very abundant. R. F. Griggs.

1943a Helianthus maximiliani Schrad. Sandusky. A single plant along railroad tracks. R. F. Griggs.

COLLECTING AND PRESERVING MICROSCOPIC PLANTS.

Small plants like Desmids, Diatoms, etc., may be preserved in water, in homeopathic vials, provided a drop of carbolic acid is added to each bottle of material. In this way they will keep for a long time with very little change of color and contents.

J. H. S.

- Transcriber's Notes:
    - Missing or obscured punctuation was corrected.
    - Typographical errors were silently corrected.
    - Inconsistent spelling and hyphenation were made consistent only when a predominant form was found in this book.

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