State University of Iowa Studies
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According to the Report of the Iowa Academy of Science, Biological Survey Committee[2]: "A truly comprehensive plant and animal survey of Iowa is the ultimate goal towards which the Committee is heading . . ." The present paper, treating an area which includes several counties which have been considered among the most poorly botanically known in the State[3] (Thorne, 1954), is offered to supplement Iowa botanical information currently available. In a more narrow sense, this study of southeast Iowa is one of three which, in combination, will provide recent floristic information for all of southern Iowa: Marcus J. Fay has presented information on the flora of southwest Iowa (1954); the south-central portion of Iowa is currently being investigated.

Field exploration was begun in the fall of 1952. Several months were spent in the field during the growing seasons of 1953 and 1955, but most of the collections were gathered during the 1954 season. The 110 collection stations visited were selected as representatives of the various ecological habitats evident in southeastern Iowa. Approximately 15,000 miles were traveled in visiting these stations. Notes on the flora were taken and some 4,400 collections, totaling an estimated 9,000 individual specimens, were made.

I have gone through the Herbarium of the State University of Iowa to check carefully identifications and data of specimens which were previously collected in southeastern Iowa. After my own collections and specimens in the Herbarium of the State University of Iowa had been studied, I checked identifications and data of those specimens deposited in the Herbarium of Iowa State College which represented species not previously seen by me from southeastern Iowa. Materials at Parsons College and Iowa Wesleyan College were dealt with similarly. A few critical specimens were examined at the Barnes Herbarium of the Davenport Public Museum.

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[1]Based on a dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the State University of Iowa, February 1957.

[2]Proc. Iowa Acad. Sci. 63: 55. 1956.

[3]One such county—Washington—recently has been surveyed separately by B. L. Wagenknecht (1954). Consequently, the present treatment of this county consists only of reporting some of the rarer species known to occur there.

I attempted to reconcile questions dealing with the variability and delimitation of certain species and was able to pursue some of these problems to considerable length. In this paper only the conclusions which were inferred from these studies are presented. A more detailed account of some of these problems is being prepared for separate publication.

For fear of perpetuating errors, species which have been reported in the literature as occurring in southeastern Iowa but for which no voucher specimen was found are omitted from the annotated catalogue; taxa falling into this category are treated in a separate section.

These introductory remarks would be very remiss without mention of the people who generously extended their aid during the course of this study. For his friendship and patient guidance and encouragement, I am sincerely grateful to Dr. Robert F. Thorne. The following persons were very helpful in granting full privileges of the herbaria in their charge: Dr. Robert F. Thorne, State University of Iowa; Dr. Richard W. Pohl, Iowa State College; Professor H. E. Jaques, Iowa Wesleyan College; Mrs. Laura Von Ohlen, Parsons College; Dr. L. F. Guldner, Davenport Public Museum.

Much valuable assistance was given by several specialists in certain plant groups: Dr. Robert F. Thorne checked my identifications of *Carex* and other difficult taxa; T. S. Cooperrider aided in the determinations of the Pteridophytes; Dr. N. H. Russell was helpful with problems in *Viola*; Dr. L. F. Guldner assisted in *Rosa* and *Helianthus*; M. K. Cooperrider was of aid in *Quercus*. While I used freely the generous advice offered by these authorities, I assume full responsibility for the presentation in this paper.

DESCRIPTION OF THE AREA

Location and Extent (see Plate I)

Appanoose, Davis, Des Moines, Henry, Jefferson, Keokuk, Lee, Louisa, Mahaska, Monroe, Muscatine, Van Buren, Wapello, Washington —these fourteen counties have an area of approximately 6500 square miles and comprise the southeastern Iowa region studied. The approximate coordinates at the farthest points are 41°40′ on the north, 90°55′ on the east, 40°05′ on the south, and 93°08′ on the west.

The only boundaries of the area which can be considered natural are the eastern, which is formed by the Mississippi River, and part of the southern, where the Des Moines River flanks Lee County. All boundaries elsewhere are political.

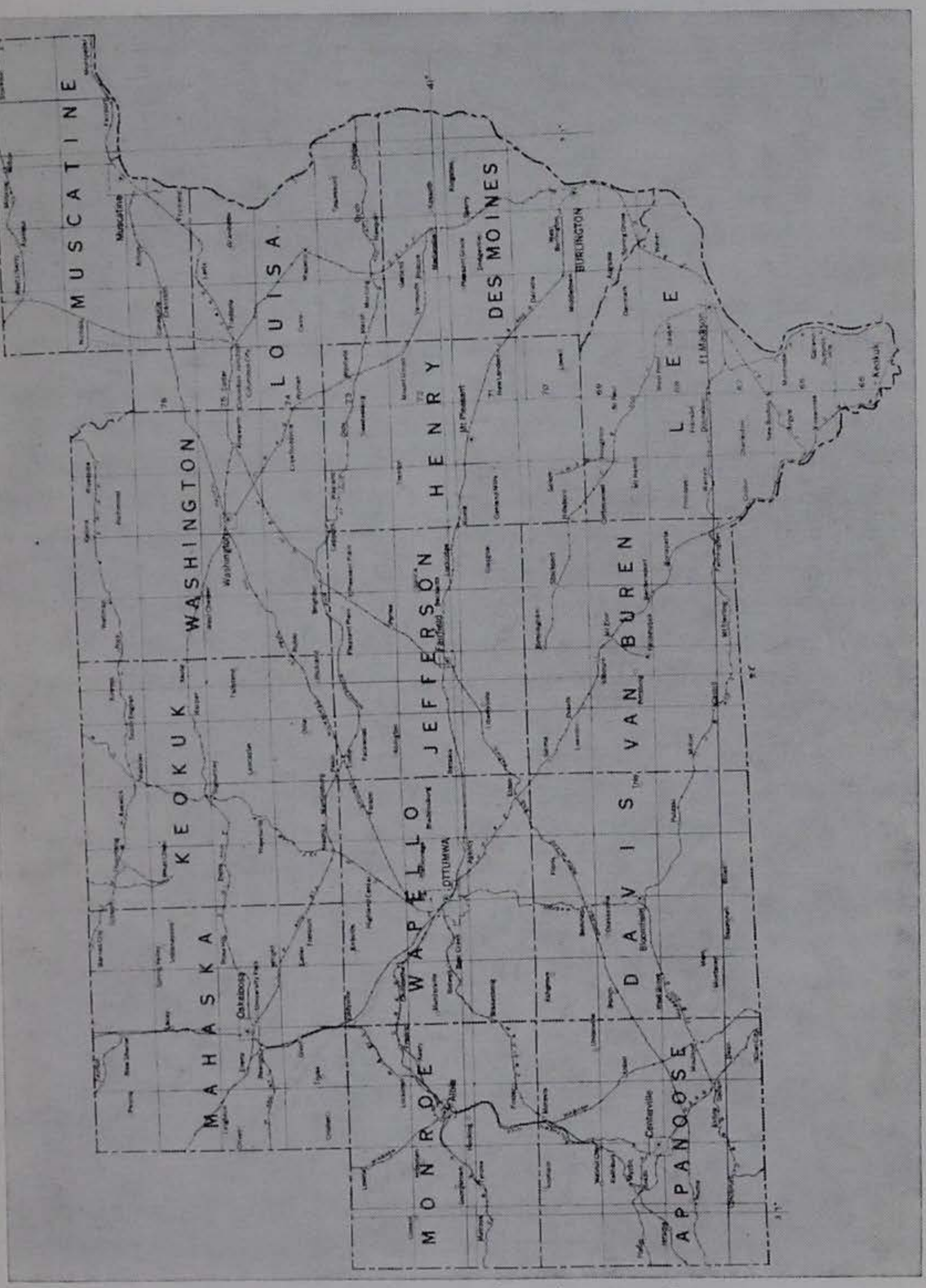

Plate I. General map of southeastern Iowa.

Geologic History[4] (see Plates II and III)

The indurated rocks which occasionally outcrop and otherwise lie beneath more superficial glacial, alluvial, or aeolian deposits are of Paleozoic origin. These sedimentary or modified sedimentary bedrocks belong to three geologic periods: Devonian, Mississippian, and Pennsylvanian.

The oldest, the Devonian, is most restricted in range; outcropping only in Muscatine County, it is represented by limestones and shales along the Mississippi River and tributaries east of the City of Muscatine and along the Cedar River near Moscow. In northeastern Louisa County the Devonian is buried beneath 100-300 feet of drift.

The superficial bedrock for approximately one-half the remainder of southeastern Iowa is Mississippian in age. Strata of this series occur, but are not known to be exposed, in southwestern Muscatine County; underlie all, or nearly all, of Louisa, Des Moines, Lee, Henry, Washington, and Keokuk counties; are exposed along major streams in Van Buren, Wapello, Monroe, Davis, Jefferson, and Mahaska counties. The high escarpment which flanks the west bank of the Mississippi for the greater part of the distance between the mouths of the Iowa and Des Moines rivers is the most impressive Mississippian formation in the area.

The youngest bedrocks of southeastern Iowa belong to the Pennsylvanian series. These, consisting primarily of shales, limestones, coals, and sandstones, form the superficial rock strata of all Appanoose County, nearly all of Monroe, Davis, Jefferson, and Wapello counties, and are present to some extent in Van Buren, Lee, Mahaska, and other counties. In Muscatine County this series appears as an outlier of conglomerates, sandstones, and shales. In Mahaska County, the Raven Cliff area offers a rather spectacular exhibit of Pennsylvanian sandstones.

Only at the localized spots where they appear at the surface do these bedrocks affect vegetation. Of far greater importance are the generally overlying glacial drifts and aeolian loesses, for from these materials the soils of the region were derived.

The first glacier, the Nebraskan, passed over the entire region some one million years ago. It remained thousands of years, then receded, leaving a mantle of drift averaging approximately 100 feet in thickness. This mantle of boulders, gravel, sands, silts, and clays was dispersed heterogeneously in some places while in others the materials

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[4]Geologic and physiographic data from several sources; see list of references.

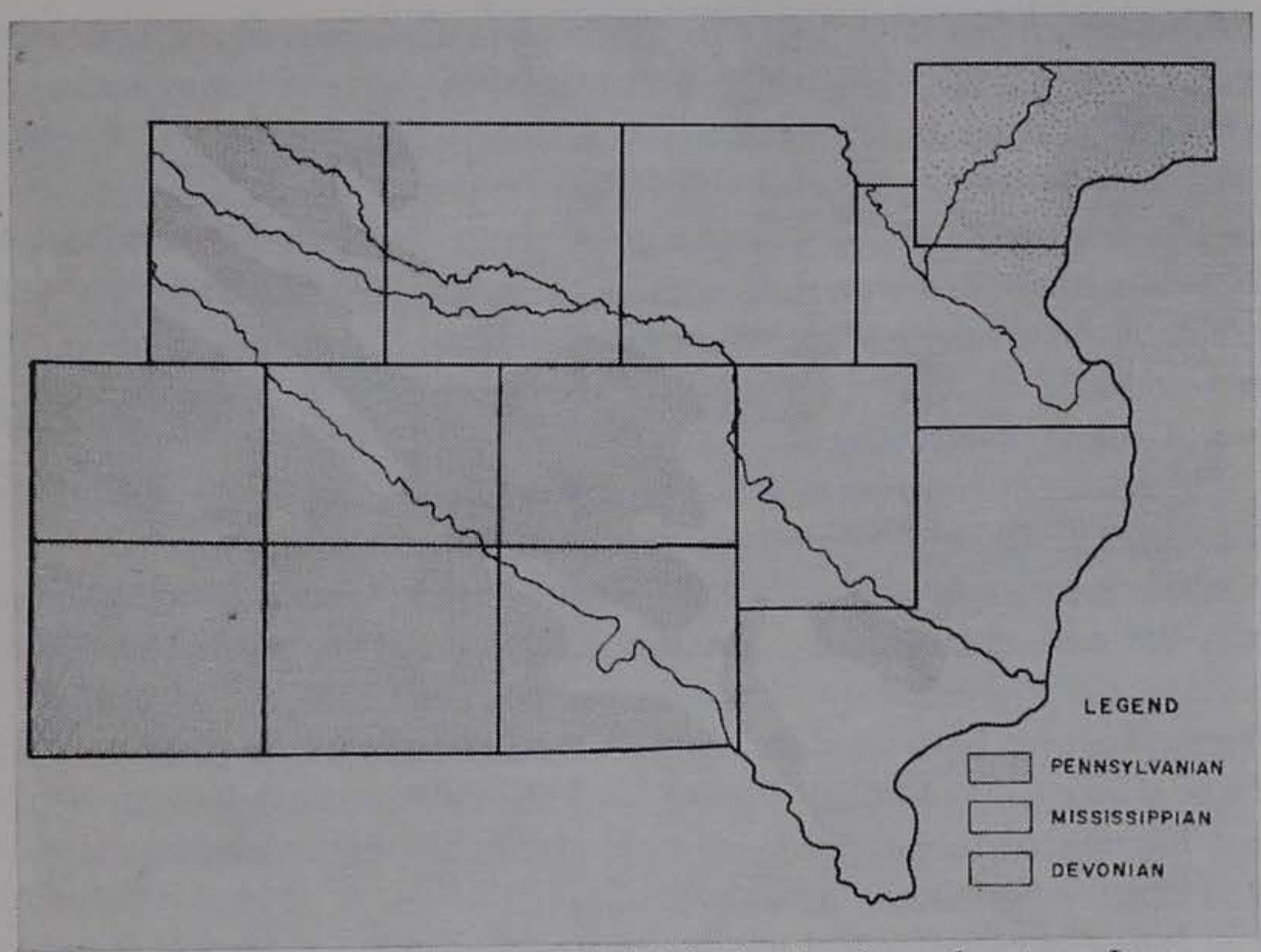

Plate II. Map showing superficial bedrock of southeastern Iowa.

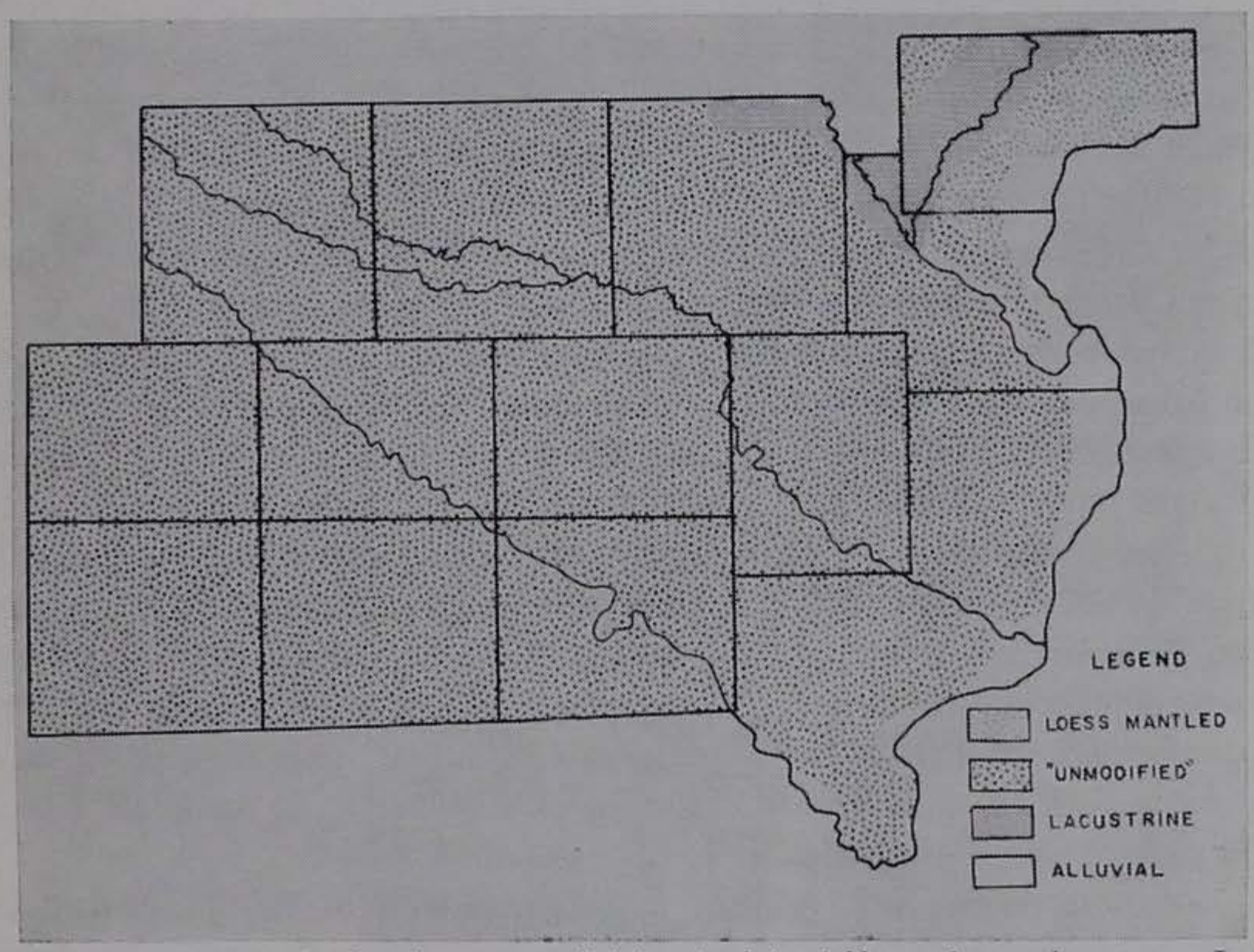

Plate III. Map indicating superficial glacial drifts of southeastern Iowa (Nebraskan deposits underlay Kansan and Illinoian).

were sorted and bedded fluvially. During the early part of the first interglacial interval, the Nebraskan drift plain—incessantly preyed upon by agents of erosion and weathering—apparently was occupied by coniferous forests; later, grasses dominated.

In southeastern Iowa, exposures of the Nebraskan drift are infrequent since these materials later were covered by the Kansan glacier and its remnant drift plain. Fossils of balsam fir, pine, and tamarack give evidence of forests growing on the Kansan drift plain during the second interglacial interval.

Portions of Iowa were yet to be subjected to three other glaciations: Illinoian, Iowan, and Wisconsin.

Of these only the Illinoian entered southeastern Iowa. Coming from the east rather than from the north as did its predecessors, the Illinoian ice overran only the eastern part of the area, so that when it retreated a new layer of drift covered the eroded Kansan plain in parts of Lee, Henry, Des Moines, Louisa, and Muscatine counties.

Though certain aspects of each glaciation were unique, the drift materials they left were notably similar.

Two other features of the geology of southeastern Iowa are worthy of mention: Lake Calvin and loess.

When the Illinoian glacier crossed the Mississippi Valley, the river was forced to find new courses around the front of the advancing ice. Finally the waters of the river were banked by the highlands near the site of Columbus Junction and eventually formed a lake that covered the present lower course of the Cedar River and extended far up the Cedar and Iowa valleys. This Pleistocene body of water has been named Lake Calvin. Bluffs were formed on its shores by the undermining action of waves; deltas were built of the detritus brought in by the streams, and the finer materials settled in the more quiet waters to build up the bed. The lacustrine sediments of Lake Calvin form a Pleistocene deposit which is unique for Iowa.

Loess, the gray to yellow, silty, clay-like material which blankets much of southeastern Iowa's surface, evidently was deposited by winds. The materials apparently were derived, at least partially, from the dried muds of glacially enlarged drainageways. Most of the loess particles are microscopic in size and are usually flattish and angular. These properties allow the loess to stand in characteristically vertical, somewhat columnar, faces when it is exposed to erosion.

Very little loess is present between the Nebraskan and Kansan drift sheets. The surfaces of the Kansan and Illinoian drifts, however, are quite heavily blanketed with loess. This layer averages about ten

feet in thickness but varies considerably from this figure. Two deposits are typically present: a grayish phase (called the Loveland), and a more superficial, yellowish phase (the Peorian). The Loveland materials were derived from the boulder clays and similar materials of the Kansan and Illinoian drifts. The younger Peorian materials were derived from the drift of the Iowan glacier which stopped its southward march just short of southeastern Iowa.

Physiography

(a) *Topography* (see Plate IV)

The lowest place in the area (as well as in the entire state) is at the low water mark of the Mississippi at Keokuk. Here the elevation is 477 feet above sea level. Generally, elevations increase to the north and west of Keokuk. The maximum elevation, 1009 feet, occurs near Moravia, which lies near the east fork of the divide separating the Missisippi/Missouri watershed.

In general aspect, southeastern Iowa is a plain. Moderate local relief and gentle slopes are the rule. The topographic differences between various localities, however, usually are obvious and the causes of these differences are fairly well known. The four basic types of

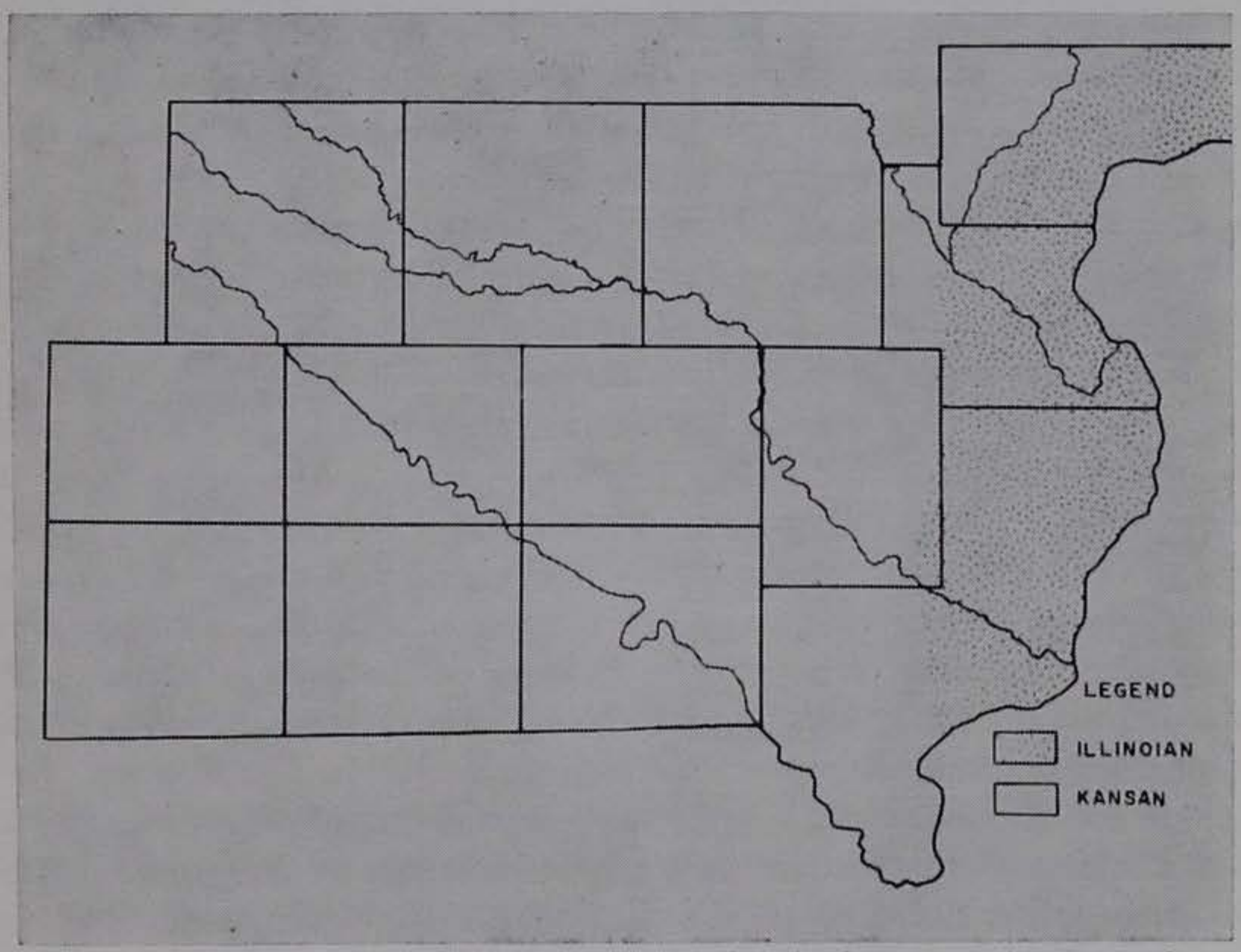

Plate IV. Map of southeastern Iowa showing basic types of topography.

topography in southeastern Iowa can be described on the basis of these causal differences.

With the exception of certain areas mentioned later, the entire region possesses what is termed *unmodified erosional topography*. Such topography is due chiefly to erosion by running water which has not severely modified the old drift plain surface. In parts of Washington, Henry, and Jefferson counties, and elsewhere, the rolling, yet basically level surface of the loess-mantled Kansan drift plain remains nearly intact showing only slight erosional modification. In these areas, except near the main drainage channels, the valleys are broad, open, and shallow; the uplands are flat and tabular and are drained by broad shallow depressions. Other sectors of this unmodified erosional topographic region are considerably rougher. Such land prevails particularly in the western counties. For example, in parts of Appanoose, Monroe, and Mahaska counties, the tabular upland areas are small, local relief is greater, and a large part of the drainage flows through V-shaped valleys. However, the even skyline, the accordant upland levels, and other features attest to the original drift plain surface of the land.

In parts of Muscatine County, and in northeastern Louisa County, another topographic type occurs. This has been termed *loess mantled erosional topography,* and is characterized by a covering of loess which is sufficiently thick to modify the underlying erosional topography. The loesses which comprise this particularly thick blanket were derived from Iowan drift, the southern margin of which is close to the Muscatine-Louisa county line. Because loesses characteristically erode vertically, valley walls are often quite steep. Dunelike accumulations of loess and sand occur. The crests of hills are asymmetrically capped by loess which is thickest on the eastern leeward slopes. Hillsides generally are broken into a series of undulating curves.

The basin of Lake Calvin exclusively exemplifies a third topographic type: *lacustrine depositional topography*. Included here are parts of Muscatine, Louisa, and Washington counties. The old sandy beaches are still preserved in places; former islands now stand as hills; breaks in the former lake shore often coincide with the valleys of presently active streams. The general flatness of the area is partially obscured by the "island hills" and by wind-formed dunes which piled up after the lake drained.

A fourth basic type, *alluvial depositional topography,* occurs along both major and minor streams, being best developed along parts of the Mississippi. In these areas, the river bluffs stand far back from the stream and overlook wide expanses of alluvium. A large alluvial plain

lies between Fort Madison and the mouth of the Skunk River. Another broad alluvial belt extends from Burlington to the mouth of the Iowa River. North of the Iowa, extending to the City of Muscatine, lies an area of alluvium which in places is over five miles wide. This area includes a large, mostly sandy portion, Muscatine Island. Big Sand Mound, extending through part of Muscatine Island and the site of several large shifting sand dunes, is the remnant of an old terrace. Much of the entire Mississippi alluvial area is now artifically drained and protected by levees.

(b) *Drainage* (see Plate V)

Two great river systems are involved in the drainage of southeastern Iowa: the Missouri and the Mississippi. The southwestern part of the area, i.e., southwest Monroe County and most of Appanoose County, is drained by the Chariton River which discharges into the Missouri River near Glasgow, Missouri. The remainder of southeastern Iowa is drained by the Mississippi River system of which the

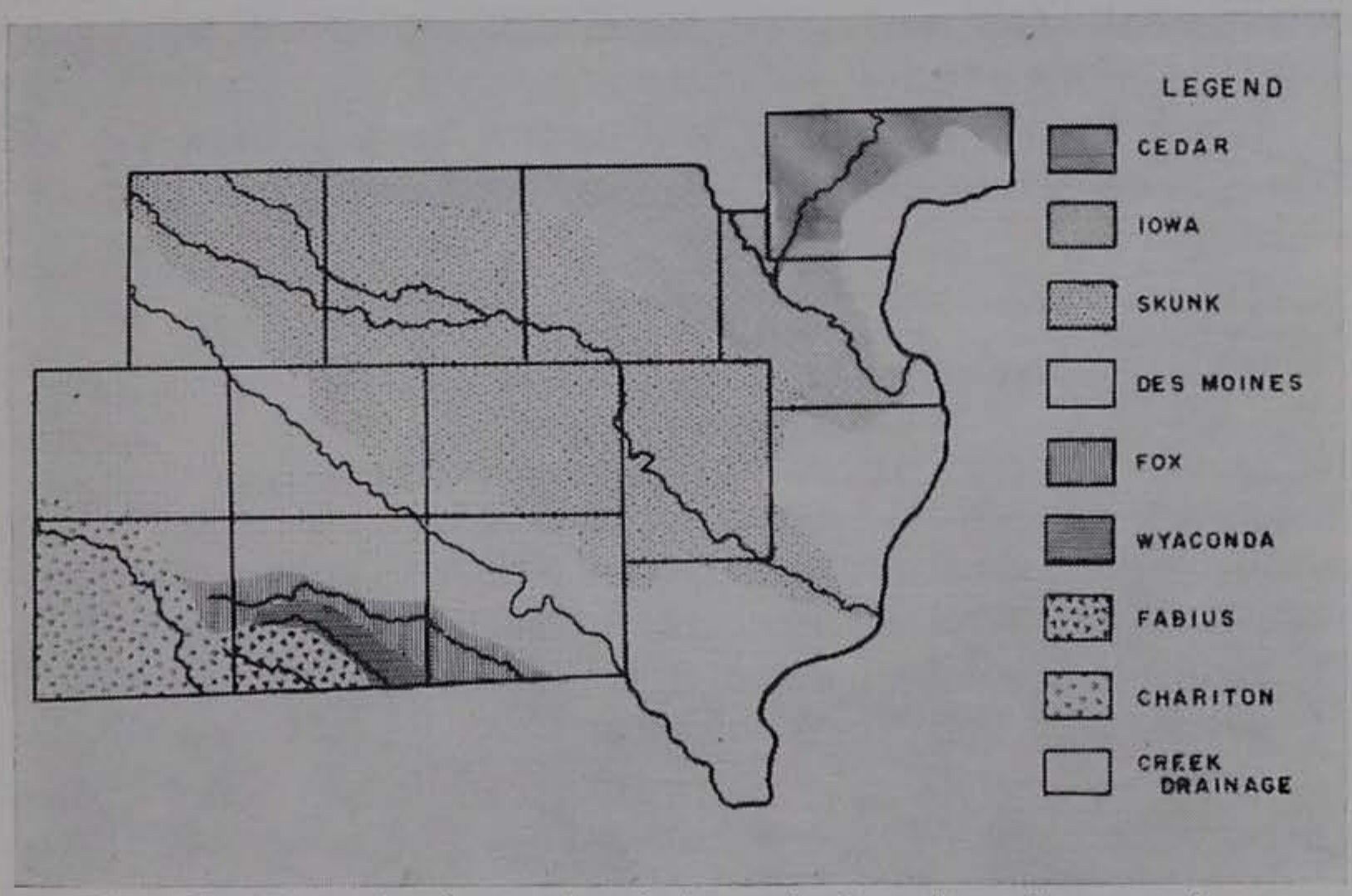

Plate V. Map showing major drainage basins of southeastern Iowa.

most important rivers are the Cedar, Iowa, Skunk, Des Moines, Fox, Wyaconda, and Fabius rivers. All, except the Cedar, which flows into the Iowa, empty into the Mississippi at various points between Louisa County, Iowa and Hannibal, Missouri. These seven rivers with their tributaries and intermittent drainageways provide drainage for all southeastern Iowa except the southwestern portion previously mentioned

and areas immediately west of the Mississippi Valley which are drained directly to the river through creeks. Generally, southeastern Iowa is well drained; drainage is inadequate only on some of the more level upland divides and in the bottoms along streams.

Climate

The climate of Iowa is of the extreme midcontinental type. Southeastern Iowa thus is a region in which temperatures are relatively extreme for the latitude. Warm to hot summers, with their occasional droughts, alternate with cold winters which are often intensified by sweeping boreal cold waves.

To obtain some concept of certain aspects of the climate, data are presented from twelve weather stations widely scattered throughout southeastern Iowa. Since most of my collecting was done during 1954, weather data for that year is given—this data is then compared with long range averages or "normals."[5]

The annual average temperature for 1954 was 52.9°F. or 2.1° above normal. This was the third consecutive year with temperatures averaging above normal.

TABLE I gives for twelve southeastern Iowa stations the 1954 monthly temperature averages showing deviations from long range normals.

TABLE I

Monthly temperature averages for 1954
and departures from normal

Month	Temperature	Departure from normal
January	26.9°F.	0.2°F.
February	38.7	12.5
March	35.8	—3.2
April	55.6	4.9
May	57.5	—4.4
June	75.1	4.1
July	79.1	2.1
August	73.9	0.1
September	68.5	2.4
October	53.8	—0.5
November	42.5	2.5
December	30.4	2.9

The highest temperature recorded was 106° F. (August 4th; Bloomfield), far short of the 115° record (Keosauqua and Ottumwa). The 1954 average of the maximum temperatures recorded at the twelve

[5]Weather data from: U.S. Department of Commerce, 1955.

stations was 100.6°; these extremes were reached toward the end of July or beginning of August.

The minimum temperature recorded was —11° F. (January 17th; Columbus Junction, Sigourney, Oskaloosa, Washington), far short of the —31° record (Keosauqua and Oskaloosa). The 1954 average of the minimum temperatures recorded at the twelve stations was —9.2°; these extremes were reached in mid-January.

In keeping with midcontinental climate characteristics, most of southeastern Iowa's annual rainfall occurs during the growing season. The average annual precipitation for 1954 was 35.32 inches, or 1.27 inches greater than normal.

TABLE II

Monthly precipitation averages for 1954 and departures from normal

Month	Precipitation	Departure from normal
January	0.32 inches	—0.69 inches
February	1.15	—0.49
March	3.02	0.78
April	5.22	2.17
May	3.53	—0.47
June	4.48	—0.35
July	1.33	—2.36
August	6.70	3.04
September	1.37	—2.75
October	6.37	3.82
November	0.48	—1.52
December	1.28	—0.06

Table II gives for the twelve stations the 1954 monthly precipitation averages comparing them with long range normals.

The maximum amount of precipitation for 1954 was 40.74 inches at Muscatine, or 7.06 inches greater than normal for that station. The minimum for 1954 was 31.91 inches at Albia, or 0.8 inches less than normal for that station.

In 1954, the average growing season was 166 days, the range being from 125 days (Oskaloosa) to 178 days (Ottumwa). The normal average growing season for southeastern Iowa is 169 days.

Soils

Discussed very broadly, the soils of southeastern Iowa may be divided into two major categories dependent upon the type of vegetation which developed upon them: prairie soils which are chernozems or prairyerths, and woodland soils which are gray-brown podzolics. Modern

pedologists recognize within these two groups many soil associations which include many soil types.

The classification followed in the *Soil Survey of Iowa* series divides the soils of southeastern Iowa into five classes: loess, drift, terrace, swamp and bottomland, and residual.

Loess soils consist primarily of microscopic, dust-like particles which were deposited by wind during the Pleistocene. These soils cover approximately 67% of the area of southeastern Iowa; they are found mainly in upland sections where erosion has not been excessive.

Drift soils, formed from the glacial deposits of the Pleistocene, consist of mixtures of clay, sand, gravel, pebbles, and boulders. These soils cover approximately 12% of the area; they are often present on uplands and hilly regions near streams.

Terrace soils are old bottomland soils which are now above overflow because of a decrease in the volume of the streams which deposited them or because of a deepening of the stream channel. Such soils cover approximately 7% of the area; they occur along streams or along the channels of formerly active streams.

Bottomland soils are made up of alluvially deposited detritus. These soils cover approximately 14% of the area; they occur in low, poorly drained places along or near streams.

Residual soils are derived from the native bedrock. They cover a mere 0.08% of the area and occur mostly on bluffs adjacent to streams.

EXPLANATION OF THE ANNOTATED CATALOGUE

In the annotated catalogue of vascular plants of southeastern Iowa, the fern families are arranged according to Copeland (1947); the remaining families are arranged according to the Engler and Prantl system. The latter system, although antiquated, was selected because of its continued usage in regional manuals and most other floristic works, and because no one of the more modern systems of classification of the higher plants has, as yet, enjoyed wide acceptance.

Infrafamilial categories are arranged alphabetically.

The nomemclature is in accordance with the International Code. Recent regional floras, taxonomic monographs and revisions, and other appropriate literature were consulted in identifying materials and in the application of names. Where treatments of certain taxa reflected different taxonomic interpretations, the one considered most appropriate was followed. Deviations from the literature sometimes were necessary to express my opinions; in these instances brief taxonomic notes are given. These and other notes considered germane to certain taxa and specimens are to be found scattered throughout the text and in footnotes. Intraspecific names are omitted from the catalogue except where these have well defined geographic or ecologic significance.

Asterisks (*) placed before binomials indicate species considered introduced or adventive.

To conserve space, common names of species are omitted.

Terms indicating the frequency of each species are based, with rare exceptions, upon the following scale: rare, 1-2 recorded stations; infrequent, 3-6; frequent, 7-9; and common, 10 or more stations. In addition, the term abundant is sometimes used to indicate local density of species otherwise rare for the area as a whole.

Habitat data, known to be pertinent in southeastern Iowa, are given for each species (unless, as in the case of certain rarities, such information is lacking). For species considered common, frequent, and infrequent the habitat data are given in an introductory, summary statement which precedes the frequency term. In addition, for species considered infrequent the counties from which specimens have been seen are given, using the following abbreviations: A, Appanoose; DA, Davis; DM, Des Moines; H, Henry; J, Jefferson; K, Keokuk; LE, Lee; LO, Louisa; MA, Mahaska; MO, Monroe; MU, Muscatine; VB, Van Buren; WAP, Wapello; WASH, Washington.

For species considered rare, a different format is employed: specimens are individually cited by county (see county abbreviations given above). Since the rarities, in several respects, are the critical species

of a flora, the importance of citing these specimens—and so far as is known their habitats, locations, collectors, dates, and disposition—seems to more than justify required space.

Because of the strict summarization employed in these specimen citations, a rather detailed explanation is indicated:

1. The specimens are arranged alphabetically by county; if two or more specimens from one locality have been seen only one of these—usually the most recent—is cited.
2. If locations are given by the township and range system the items of this system are abbreviated so that, e.g.: 75-15, represents Township 75 North, Range 15 West; 2-75-15, limits the location to Section 2 of the same township and range; NE¼ 2-75-15, further limits the location to the northeast quarter of Section 2 of the same township and range.
3. Except for the author's specimens, which are designated by italicized collection number(s) only, surnames of collectors and the dates of collection are given if known.
4. All cited specimens lacking a parenthesized abbreviation are deposited in the Herbarium of the State University of Iowa. Specimens not so disposed are located by the following abbreviations: (ISC), Herbarium of Iowa State College; (PC), Herbarium of Parsons College; (IWC), Herbarium of Iowa Wesleyan College; (DPM), Barnes Herbarium of the Davenport Public Museum.

The annotated catalogue is based entirely (with one or two well marked exceptions) on specimens examined and labeled or annotated by the writer. The number of these specimens is estimated at 14,000.

LYCOPODIACEAE (Club-Moss Family)

Lycopodium complanatum L.—Rare. MU: damp woodland ravine, Pine Mills, Reppert, 1894. WASH: limestone outcrop along English River near Wellman, Griffin, 1953 (this specimen was not seen by me but is included on the verification of Dr. R. F. Thorne).

Lycopodium lucidulum Michx.—Rare. MU: Shimek, 1897.

SELAGINELLACEAE (Spikemoss Family)

Selaginella apoda (L.) Spring.—Rare. MU: seepage-bog at base of sandy bluff, SW¼ Sec. 15, Lake Twp., Thorne & Hulbary, 1958.

Selaginella rupestris (L.)Spring.—Rare. MU: sandy flat W of Bayfield, Shimek, 1916.

EQUISETACEAE (Horsetail Family)

Equisetum arvense L.—Moist woods, creek banks, prairie remnants, roadsides, railroad ballast and waysides; common.

Equisetum hiemale L. (*E. prealtum* Raf.; inc. *E. robustum* A. Br.).—Moist, often sandy, soil along sloughs and streams; common.

Equisetum laevigatum A. Br. (*E. kansanum* Schaffner).—Sandy soil and prairie remnants; frequent.

Equisetum pratense Ehrh.—Rare. MU: wet, sandy woods, NW¼ 7, Lake Twp., Thorne, 1952.

OPHIOGLOSSACEAE (Adder's-tongue Family)

Botrychium dissectum Spreng. (inc. *B. obliquum* Muhl.).—Rare. VB: rich wooded slope, Oakland Mills St. Pk., *4360, 4361*. WASH: bank of Skunk River, Sec. 11, Marion Twp., Wagenknecht, 1953.

Botrychium virginianum (L.) Sw.—Rich upland slopes and ravines, and alluvial woods; common.

OSMUNDACEAE (Cinnamon Fern Family)

Osmunda cinnamomea L.—Rare. MU: collected in 1891 (Reppert), 1928 (Shimek), and 1952 (Thorne), in wet, sandy, shady places in Lake Twp.

Osmunda claytoniana L.—Wooded upland slopes, ravines, and alluvium; frequent.

Osmunda regalis L.—Rare. MU: sandy depressions in Lake Twp., Shimek, 1928.

PTERIDACEAE (Bracken Family)

Adiantum pedatum L.—Rich wooded slopes and ravines; common.

Pellaea atropurpurea (L.) Link (inc. *P. glabella* Mett.).—Rocky ledges; infrequent. DM, MU.

Pteridium aquilinum (L.) Kuhn var. *latiusculum* (Desv.) Underw. (*P. latiusculum* (Desv.) Hieron.; *Pteris aquilina* L.).—Rare. MU: thickets SW of Muscatine, Shimek, 1897; Sweetland Creek, Shimek, 1900.

ASPIDIACEAE (Shield Fern Family)

Athyrium filix-femina (L.) Roth (*A. angustum* (Willd.) Presl; *Asplenium filix-femina* (L.) Bernh.).—Wooded ravines, slopes, and alluvium; frequent.

Athyrium thelypterioides (Michx.) Desv. (*A. acrostichoides* (Sw.) Diels; *Asplenium acrostichoides* SW.; *Asplenium thelypterioides* Michx.).—Wooded slopes; infrequent. MA, MU.

Athyrium pycnocarpon (Spreng.) Tidestr. (*A. angustifolium* Michx.;
Asplenium angustifolium (Michx.) Milde).—Rare. WASH: 6 mi. SE of Riverside, Sec. 10, Iowa Twp., Wagenknecht, 1953.

Cystopteris bulbifera (L.) Bernh. (*Filix bulbifera* (L.) Underw.).—Wooded, mostly rocky, ledges, bluffs, ravines, and creek banks; frequent.

Cystopteris fragilis (L.) Bernh. (*Filix fragilis* (L.) Gilib.).—Woods; common.

Dryopteris cristata (L.) Gray (*Aspidium cristatum* (L.) Sw.; *Nephrodium cristatum* (L.) Michx.; *Thelypteris cristata* (L.) Nieuw.).—Rare. MU: ravine along Lentizinger's Creek, Bloomington Twp., Reppert, 1894; boggy marsh at base of sandy bluff E of Cedar River, Sec. 15, Lake Twp., Thorne, 1952.

Dryopteris goldiana (Hook.) Gray (*Aspidium goldianum* Hook.; *Nephrodium goldianum* (Hook.) Nieuw.).—Moist wooded, mostly sandy, ravines and slopes; infrequent. MA, MU.

Dryopteris spinulosa (O. F. Muell.) Watt (*D. austriaca* (Jacq.) Woynar; *Aspidium spinulosum* (O. F. Muell.) Sw.).—Moist wooded ravines, slopes, and rocky bluffs; infrequent. MU, VB.

Matteuccia struthiopteris (L.) Todaro (*Onoclea struthiopteris* (L.) Hoffm.; *Pteretis pensylvanica* (Willd.) Fern.).—Rare. A: woods, Ewers, 1902. MU: Wildcat Den and 76 Twp., Reppert, 1891.

Onoclea sensibilis L.—Moist shady or open ground; common.

Polystichum acrostichoides (Michx.) Schott (*Aspidium acrostichoides* (Michx.) Sw.).—Moist wooded banks, slopes, and ravines; common.

Thelypteris hexagonoptera (Michx.) Weatherby (*Dryopteris hexagonoptera* (Michx.) C. Chr.; *Lastrea hexagonoptera* (Michx.) Nieuwl.; *Phegopteris hexagonoptera* (Michx.) Fee).—Moist wooded banks, slopes, and ravines; infrequent. LO, MU.

Thelypteris palustris Schott (*Dryopteris thelypteris* (L.) Gray).—Rare. LO: SW of Cone, Shimek, 1926. MU: SE of Salisbury Bridge, Shimek, 1923.

Thelypteris phegopteris (L.) Slosson (*Dryopteris phegopteris* (L.) C. Chr.; *Phegopteris polypodioides* Fee).—Rare. MU: Wildcat Den, Reppert, 1897.

Woodsia obtusa (Spreng.) Torr.—Wooded rocky ledges, slopes, and ravines; infrequent. H, MA, MU, VB.

Polypodiaceae (Polypody Family)

Polypodium vulgare L. (inc. *P. virginianum* L.).—Rare. MA: sandstone ledges, The Bluffs along Des Moines River, SW of Oskaloosa, Shimek, 1920. MU: shaded sandstone cliff, *4319*.

Aspleniaceae (Spleenwort Family)

Asplenium platyneuron (L.) Oakes.—Open woods, bluffs and shady ravines; infrequent. MU, VB.

Camptosorus rhizophyllus (L.) Link.—Rare. MA: sandstone ledges, The Bluffs along Des Moines River, SW of Oskaloosa, Shimek, 1921. MU: moist, shaded sandstone cliff, Wildcat Den, *4337*.

Marsileaceae (Pepperwort Family)

**Marsilea quadrifolia* L.—Rare, but locally abundant. VB: growing around margin and in shallow water of Lake Lacey-Keosauqua, *1821, 3619*. This plant is believed to have been first introduced by the Campbells to their farm at Mt. Zion, near Lacey-Keosauqua. Whether it was also planted in Lacey-Keosauqua or escaped there is not known.

Salviniaceae (Water Fern Family)

Azolla mexicana Presl (*A. caroliniana* of authors, not Willd.).—Floating on still water or stranded on mud; infrequent. LO, MU.

Taxaceae (Yew Family)

Taxus canadensis Marsh.—Rare. MU: Moscow, Reppert, 1899. VB: steep, limestone ledges along creek approx. 1 mi. E of Bonaparte, *3891*. The VB County collection is from the most southerly known station in Iowa and is also south of the most southerly reported station in Illinois (Jones, 1955).

Pinaceae (Pine Family)

Pinus strobus L.—Rare. MU: Wildcat Den, Shimek, 1897. Wildcat Den is the only station known to the author where this species is definitely indigenous. Several large trees apparently thrive, and reproduction seems quite successful. On an herbarium label (WASH, 1914) H. A. Anderson stated: "In woods, and planted, Brighton." This station has not been visited, but it is thought unlikely that the species is native there. A very large tree, which I can only assume was planted, occurs near the main entrance to Lacey-Keosauqua St. Pk.

CUPRESSACEAE (Cypress Family)

Juniperus virginiana L.—Sparsely wooded bluffs and slopes, old pastures, cut-over areas; common.

TYPHACEAE (Cat-tail Family)

Typha latifolia L.—Marshes, sloughs, wet ditches; common.

SPARGANIACEAE (Bur-reed Family)

Sparganium americanum Nutt. (inc. S. *androcladum* (Engelm.) Morong —see Beal & Monson, 1954).—Marshes and shallow ponds; infrequent. LE, LO, MU.

Sparganium eurycarpum Rydb.—Pond and slough margins, marshes, wet ditches; frequent.

ZOSTERACEAE (Pondweed Family)

During the past decades more and more land has been cultivated. Consequently, there has occurred a gradual restriction in habitats available to the native terrestrial flora. Moreover, the almost continuous exposure of a great amount of soil has caused once clear streams and ponds to become so impure and muddy that now it is very difficult to imagine the ". . . bright transparency of the Des Moines" (Hayden, 1943). The contamination of the waters, plus water lost by drainage, apparently has caused a wane in many aquatics. The pondweeds are no exception.

Potamogeton amplifolius Tuckerm.—Rare. MU: near Cedar River, Salisbury Bridge region, Lake Twp., Reppert, 1894.

Potamogeton diversifolius Raf. (*P. dimorphus* of authors, not Raf.; *P. spirillus* of authors, not Tuckerm.).—Marshes and shallow ponds; infrequent. LO, MU, VB.

Potamogeton epihydrus Raf.—Rare. MU: ponds and sloughs near Cedar River, Lake Twp., Reppert, 1894.

Potamogeton foliosus Raf.—Sloughs, marshes, ponds, and lakes; common.

Potamogeton illinoensis Morong.—Rare. MU: fish-pond, Fairport Fish Breeding Station, *4307*.

Potamogeton natans L.—Rare. MU: in a pond near Cedar River, Salisbury Bridge region, Lake Twp., Reppert, 1895.

Potamogeton nodosus Poir. (*P. americanus* C. & S.; *P. lonchites* Tuckerm.).—Ponds, marshes, sloughs, lakes, and rivers; common.

Potamogeton pectinatus L.—Ponds, marshes, sloughs, and lakes; frequent.

Potamogeton pusillus L. (*P. panormitanus* Biv.).—Sloughs and lakes; frequent.

Potamogeton vaseyi Robbins.—Rare. LO: shallow water, Moose Duck Club, Conesville Marsh, Oakland Twp., Thorne, 1952 (this fragmentary specimen has been checked by E. Beal; I assume the identification is correct).

Potamogeton zosteriformis Fern.—Rare. MU: pond near Cedar River, Lake Twp., Reppert, 1895.

Zannichellia palustris L.—Rare. MU: in many ponds and sloughs, also in Cedar River, Reppert, 1894.

NAJADACEAE (Naiad Family)

Najas flexilis (Willd.) Rostk. & Schmidt.—Sloughs, ponds, lakes and reservoirs; frequent.

Najas guadalupensis (Spreng.) Magnus.—Marshes and lakes; infrequent. LO, MA, VB.

ALISMATACEAE (Water-plantain Family)

Alisma subcordatum Raf. (*A. plantago-aquatica* of authors, not L.).—Shallow water or muddy margins of lakes, sloughs, ponds, and streams; common.

Echinodorus rostratus (Nutt.) Engelm. (*E. cordifolius* of authors, not (L.) Griseb.).—Rare. LE: Keokuk, Shimek, 1895. MU: ponds above Muscatine, Reppert, 1891.

Sagittaria[6] *engelmanniana* J. G. Smith (*S. brevirostra* Mackenz. & Bush; *S. latifolia* of authors, not Willd.).—Marshes, and shallow water and muddy margins of lakes, ponds, and streams; infrequent. LE, MA, VB.

Sagittaria graminea Michx.—Wet pond margins; infrequent. LE, LO, MU.

Sagittaria latifolia Willd.—Shallow water and margins of lakes, ponds, sloughs; frequent.

Sagittaria montevidensis Cham. & Schlecht. (*Lophotocarpus calycinus* (Engelm.) J. G. Smith).—Rare. DM: muddy floor of Ray Lake, 72-1, *1687*. WASH: shallow water in slough 2 mi. W. of Brighton, Wagenknecht & Beal, 1953.

Sagittaria rigida Pursh.—Marshes, ponds, sloughs, and margins of streams and lakes; frequent.

HYDROCHARITACEAE (Frog's-bit Family)

Elodea nuttallii (Planch.) St. John (*E. canadensis* of authors, not Michx.;

[6]Specimens of *Sagittaria*, other than the author's, have been annotated by Clifford Bogin (1955) for his revision of the genus.

E. occidentalis (Pursh) St. John; *Anacharis occidentalis* (Pursh) Vict.).—Marshes, ponds, lakes, sloughs, and wet roadside ditches; frequent.

Vallisneria americana Michx. (*V. spiralis* of authors, not L.).—Rare. LE: Keokuk, Shimek, 1895.

GRAMINEAE (Grass Family)

**Aegilops cylindrica* Host.—Rare. MA: railroad ballast 2 mi. W of Wright, Augustine, 1938 (ISC).

**Agropyron repens* (L.) Beauv.—Roadsides, railways, fields, neglected lawns, and waste ground; common.

Agropyron smithii Rydb.—Open sandy places, and prairie remnants along railways; common.

Agropyron trachycaulum (Link) Steud.—Rare. K: roadside, 16-13-76, McDill, 1952 (ISC). MA: Ry. ballast, 1 mi. W of Wright, Augustine, 1938 (ISC).

**Agrostis alba* L. (inc. *A. stolonifera* L.).—Open woods, prairie remnants, roadsides, along railways, fields, barnyards, and other open places; common. One specimen examined (Davidson, VB, *2356*) is referrable to var. *compacta* Hartm.

Agrostis hyemalis (Walt.) BSP.—Sandy open places; frequent.

Agrostis perennans (Walt.) Tuckerm.—Woods and woodland openings; common.

Agrostis scabra Willd.—Woodland openings and sandy borders of ponds; infrequent. MU, WASH.

Alopecurus aequalis Sobol.—Rare. WASH: bog 3 mi. S of Washington, Red Brick School area, Sec. 32, Washington Twp., Wagenknecht, 1953.

Alopecurus carolinianus Walt. (*A. geniculatus* of authors, not L.).—Open, wet soil of depressions, ditches, and margins; infrequent. LE, MA, MU.

Andropogon gerardii Vitman (*A. furcatus* Muhl.).—Prairie remnants and roadsides; common.

Andropogon hallii Mack.—Rare. MU: Ry. track near Fairport, Muscatine, Barnes & Miller (ISC). Although these two specimens are atypically long-awned (mostly 7 mm), they are apparently of this species.

Andropogon scoparius Michx.—Sandy or prairie soil and dry open woods; common.

Andropogon virginicus L.—Rare. WAP: clay slopes of hills bordering woods along Soap Creek about 2½ mi. NW of Floris, Hayden, 1941 (ISC).

Aristida basiramea Engelm.—Sandy or dry sterile soil; frequent.

Aristida dichotoma Michx.—Dry sandy or sterile soil; infrequent. LE, VB.

Aristida longespica Poir.—Dry sandy or sterile soil; infrequent. LE, VB.

Aristida oligantha Michx.—Sandy open soil, prairie remnants, roadsides, and dry open woods; common.

Aristida tuberculosa Nutt.—Dry, sandy, open soil; infrequent. LE, LO, LO or MU.

**Avena sativa* L.—Spontaneous on roadsides, railways, waste places; apparently not established; frequent.

Bouteloua curtipendula (Michx.) Torr.—Prairie remnants and dry sandy soil; infrequent. LE, LO, MA, MU.

Bouteloua hirsuta Lag.—Dry sandy soil; infrequent. LO, MU.

Brachyelytrum erectum (Schreb.) Beauv.—Wooded slopes and ravines; infrequent. A, MU, VB.

**Bromus inermis* Leyss.—Roadsides and waste places; infrequent. H, MA, MU, WASH. One specimen examined (Davidson, MA, *509*), possessing pubescent lemmas, is referrable to forma *villosa* (Mert. & Koch) Fern.; another specimen (Wagenknecht, WASH, 1953), with lax panicle, is apparently var. *divaricatus* Rohlena.

**Bromus japonicus* Thunb.—Roadsides and waste places; frequent. One specimen examined (Davidson, H, *2454*) resembles *B. commutatus* Schrad. but is apparently only a robust plant of *B. japonicus*.

Bromus latiglumis (Shear) Hitchc.—Deep wooded ravines and slopes; infrequent. H, VB.

Bromus purgans L.—Woods; common.

**Bromus secalinus* L.—I have not collected this and herbarium specimens seen lack habitat data. Jones (1955) considers this a common species in Illinois where it occurs in fields and waste places. Infrequent in southeastern Iowa. LE, MU, VB.

**Bromus tectorum* L.—Roadsides, railways, disturbed prairie and sandy soil, waste places; common.

**Buchloe dactyloides* (Nutt.) Engelm.—Rare. WAP: in a yard at Ottumwa, Hurd, 1937 (ISC). Probably introduced as a weed in lawn seed.

Calamagrostis canadensis (Michx.) Beauv. (inc. *C. macouniana* Vasey). —Marshy ground; frequent.

Calamovilfa longifolia (Hook.) Scribn.—Rare. LO: sand, Moose Lodge area, Muscatine Isl., NE¼ 4-75-2, *3326*.

Cenchrus pauciflorus Benth. (*C. carolinianus* of authors, not Walt.; *C. longispinus* (Hack.) Fern.; *C. tribuloides* of authors, not L.).—Open sandy or sterile soil, especially along roads and railways; common.

**Chloris verticillata* Nutt.—Rare. WAP: in blue grass turf of yard, Ottumwa, Hurd, 1938 (ISC). Apparently introduced as a weed in lawn seed.

Cinna arundinacea L.—Wooded alluvium and moist wooded slopes and bluffs; frequent.

**Dactylis glomerata* L.—Roadsides, railways, fields, barnlots, and other waste places; frequent.

Danthonia spicata (L.) Beauv.—Dry, often somewhat sandy, open woods; frequent.

Diarrhena americana Beauv. (*D. diandra* (Michx.) Wood; *Diarina festucoides* Raf.).—Rare. VB: moist, rich, rocky, wooded slope, Lacey-Keosauqua St. Pk., *2563*.

Digitaria filiformis (L.) Koeler.—Rare. LE: sand terrace, SW of Ft. Madison, Shimek, 1923. MU: dry cliff and hill at Wildcat Den, Reppert, 1898.

**Digitaria ischaemum* (Schreb.) Muhl. (*D. humifusa* Pers.).—Moist and dry soil nearly everywhere, especially fields, roadsides, railways; common.

**Digitaria sanguinalis* (L.) Scop.—Railways, roadsides, waste places, fields, barnlots, sandy grassy areas; common.

**Echinochloa crusgalli* (L.) Beauv. (inc. *E. pungens* (Poir.) Rydb.).—Fields, roadsides, waste places, generally in open, especially moist, soil; common. In examining a large amount of material from Iowa and elsewhere, I was unable to find a degree of character correlation sufficient to justify maintaining *Echinochloa pungens* apart from *E. crusgalli*. This treatment is in accord with Deam (1940), Jones (1955), and Hitchcock (1950), who regard this species as polymorphic.

Echinochloa walteri (Pursh) Nash.—Rare. DM: growing on elevated "knob" in drying Ray Lake, 72-1, *1691*. LO: moist bottom of drying marsh, SW¼ 14-76-5, *3526*. One specimen examined (Davidson, DM, *1691a*) has pustular trichomes on the spikelets. Trichomes of this type are not considered typical of this species and may be considered as possible evidence of hybridization with *E. crusgalli*.

**Eleusine indica* (L.)Gaertn.—Roadsides, fields, fence-rows, barnyards, waste places; frequent.

Elymus canadensis L. (*E. brachystachys* Scribn. & Ball; *E. robustus* Scribn. & Smith).—Prairie remnants, roadsides, railways, and other open places; common. One specimen examined (Davidson, MO, *612*) shows evidence of possible hybridization.

Elymus villosus Muhl. (*E. striatus* Willd.).—Woods, especially upland areas; frequent.

Elymus virginicus L. (inc. *E. glabriflorus* Vasey).—Alluvial woods, wooded slopes and bluffs, along roadsides and railways, woodland openings, thickets, open sandy soil, meadows; common.

Eragrostis capillaris (L.) Nees.—Rare. MO: upland woods, Chariton St. Forest Reserve, *3821*. WAP: dry railroad ballast, Cliffland, NW¼ 11-71-13, *4053*.

**Eragrostis cilianensis* (All.) Link (*E. megastachya* (Koeler) Link).—Weed, especially of roadsides, railways, cultivated ground, and waste places; common.

Eragrostis frankii C. A. Meyer.—Moist, sandy margins; infrequent. H, LO, WASH.

Eragrostis hypnoides (Lam.) BSP.—Wet margins of streams, ponds, lakes, marshes, and sloughs; frequent.

Eragrostis pectinacea (Michx.) Nees.—Roadsides, railways, grassy open places, particularly in sandy areas; common.

**Eragrostis pilosa* (L.) Beauv.—Rare. DA: drying slough along railway, NW¼ 7-67-15. Reports of this species are often based upon misidentifications of *E. pectinacea*. *E. pilosa* may be readily distinguished by its smaller spikelets which do not lie parallel to the panicle branches as in *E. pectinacea* (see Pohl, 1954).

**Eragrostis poaeoides* Beauv.—Rare. J: CB & Q switchyards at Fairfield, Gilly, 1934 (ISC).

Eragrostis spectabilis (Pursh) Steud. (*E. pectinacea* var. *spectabilis* (Pursh) Gray).—Dry, sandy soil; frequent.

Eragrostis trichodes (Nutt.) Wood.—Rare. MU: Muscatine Island, Reppert, 1895.

**Festuca*[7] *elatior* L.—Roadsides and waste places; infrequent. A, H, J, K, LE.

Festuca obtusa Biehler.—Woods; common.

Festuca octoflora Walt.—Rare. LO: sandy soil near Moose Lodge, Muscatine Isl., NE¼ 4-75-2, *4122*.

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[7]Herbarium specimens of *Festuca* were on loan from the State University of Iowa at the time this genus was studied.

**Festuca rubra* L.—Rare. MA: in lawn, Oskaloosa, McCracken, 1915 (ISC). Deam (1940) believes this species is introduced frequently in lawns but escapes detection because of its close resemblance to *Festuca ovina* and *Poa pratensis*.

Glyceria septentrionalis Hitchc.—Wet margins of ponds and marshes; infrequent. LO, MU.

Glyceria striata (Lam.) Hitchc. (*G. nervata* Trin.).—Wet ravine bottoms, and pond, slough, and stream margins; frequent.

**Holcus lanatus* L.—Rare. LO: Wapello, Pickford, 1919 (ISC). This species should be sought along roads, railroads, and waste places.

**Hordeum jubatum* L.—Weed of roadsides, railways, pastures, barnyards, fields; common.

Hordeum pusillum Nutt. (*H. nodosum* of authors, not L.).—Dry sandy or sterile soil; frequent.

Hystrix patula Moench (*Asperella hystrix* (L.) Willd.).—Woods; common. One specimen examined (Shimek, MU, 1915) is apparently a hybrid between *Hystrix patula* and *Elymus canadensis*. This hybrid has been reported previously (e.g., Fernald, 1950).

Koeleria cristata (L.) Pers.—Sandy soil and upland prairie openings; infrequent. A, LO, MU, WASH.

Leersia lenticularis Michx.—Rare. MU: damp soil along Mississippi River, Reppert, 1894. WAP: slough along railway, Cliffland, NW¼ 11-71-13, *4052*.

Leersia oryzoides (L.)Sw.—Marshy ground and wet margins; frequent.

Leersia virginica Willd.—Moist wooded slopes and alluvium, occasionally in moist, more or less open, grassy places; frequent.

Leptoloma cognatum (Schult.) Chase.—Dry, extremely sandy soil, also collected in a dry, less obviously sandy, prairie remnant; frequent.

**Lolium multiflorum* Lam.—Probably more frequent than is indicated by the number of stations. J: North 2nd St. and Bernard Greesons' yard, Fairfield, Gilly, 1935 (ISC).

**Lolium perenne* L.—Probably more frequent than is indicated by the number of stations. MU: Reppert, 1892.

Melica nitens (Scribn.) Hitchc. (inc. *M. mutica* of Iowa authors, not Walt.).—Specimens collected from sandy prairie remnants along railroad and from railway cut through upland woods; infrequent. LE, MU.

**Miscanthus sacchariflorus* (Maxim.) Hack.—Rarely escaped from cultivation. LE: naturalized in old garden, Ft. Madison, Pohl, 1949 (ISC). This species also has been observed growing along

the road near the south entrance to Wildcat Den St. Pk., Muscatine Co.

Muhlenbergia brachyphylla Bush.—Rare. MU: along Cedar River, Reppert, 1895.

Muhlenbergia frondosa (Poir.) Fern. (*M. mexicana* of authors, not (L.) Trin.).—Alluvial and upland woods, prairie remnants, and waste places; frequent.

Muhlenbergia racemosa (Michx.) BSP.—Open woods, wooded bluffs, prairie openings, and prairie depressions; infrequent. DM, LO, MA, MU.

Muhlenbergia schreberi Gmel.—Open upland woods, roadside prairie remnants, and moist soil of wooded banks; frequent.

Muhlenbergia sobolifera (Muhl.) Trin.—Rare. LO: Lake Odessa area, 74-2, *1394*. VB: rocky, wooded stream bank, app. 2 mi. SE of Bonaparte, 68-8, *1809*.

Muhlenbergia sylvatica Torr.—Rare. MU: low grounds along Muscatine Slough, Reppert, 1892.

Muhlenbergia tenuiflora (Willd.) BSP.—Rare. J: upland woods, NE¼ 15-72-9, *3674*. VB: upland woods, SE¼ 17-69-9, *3440*.

Oryzopsis racemosa (Smith) Ricker.—Rare. H: Mt. Pleasant, Mills (ISC). MU: wooded bluffs along Sweetland Creek, Shimek, 1900 (ISC).

Panicum capillare L.—Weed of nearly all habitat types, especially roadsides, railways, and sandy soil; common.

Panicum clandestinum L.—Specimens collected from run in upland woods, prairie openings, and sandy soil; infrequent. MU, VB, WASH.

Panicum commonsianum Ashe var. *euchlamydeum* Shinners.—Rare. LO: Sand Mound, Sec. 4, Port Louisa Twp., Thorne, 1950. MU: sandy prairie-like area near Fruitland, *2144*.

Panicum depauperatum Muhl.—Rare. MU: dry cliff at Den, Reppert, 1895.

Panicum dichotomiflorum Michx.— Weed of stream banks, slough margins, roadside ditches, along railways, thickets, fields, and waste places; common.

Panicum implicatum Scribn. (inc. *P. huachucae* Ashe, *P. tennesseense* Ashe, and *P. praecocius* Hitchc. & Chase).—Open woods, fields, disturbed prairie remnants, especially abundant in sandy soil; common.

Panicum latifolium L.—Woods; frequent. Bearded nodes, a characteristic most often associated with the presumably closely related *P.*

boscii Poir., occur frequently in southeast Iowan material of *P. latifolium*.[8]

Panicum leibergii (Vasey) Scribn.—Rare. MU: prairie about RR cut, nearly 1 mi. N of Summit, Shimek, 1924.

Panicum linearifolium Scribn.—Rare. WAP: Cliffland, Sec. 11 & 12, Keokuk Twp., Thorne, 1950.

**Panicum miliaceum* L.—Rarely escaped from cultivation. MU: Muscatine, Iowa, Rosenberger, 1915 (ISC).

Panicum oligosanthes Schultes (inc. *P. scribnerianum* Nash).—Dry sandy soil; common. One variously annotated specimen examined (Shimek, MU, 1923) possesses atypically small spikelets.

Panicum perlongum Nash.—Rare. DA: Bloomfield, Pammel, 1898 (ISC).

Panicum virgatum L.—Open sandy soil and prairie remnants; common.

Paspalum ciliatifolium Michx. (inc. *P. stramineum* Nash).—Dry, sandy, open soil; frequent.

Phalaris arundinacea L.—Rare. MU: low ground SE of Salisbury Bridge, Shimek, 1923.

**Phalaris canariensis* L.—Rarely spontaneous, perhaps starting from seeds in bird-cage debris. J: N 3rd St. at Greesons' (Fairfield), Gilly, 1935 (ISC).

**Phleum pratense* L.—Weed of roadsides, pastures, barnyards, and other disturbed ground; common.

Phragmites communis Trin.—Rare. MU: ponds near Cedar River, E of Saulsbury Bridge, Sec. 2, Lake Twp., Thorne & Beal, 1951. WASH: swampy area 3 mi. E of Riverside, Wagenknecht, 1953.

**Poa annua* L.—Rarely collected but possibly rather frequent in lawns, waste places, etc. H: Mt. Pleasant, Mills, 1894 (ISC).

**Poa bulbosa* L.—Rare. MU: Muscatine, Merrill, 1922 (ISC)

Poa chapmaniana Scribn.—Rare. WAP: Ottumwa, Pammel, 1898 (ISC).

**Poa compressa* L.—In almost any non-aquatic habitat; common.

Poa languida Hitchc.—Rare. MU: dry upland woods, Wildcat Den St. Pk., Thorne, 1952.

Poa palustris L. (*P. triflora* Gilib.).—Rare. MU: low places north of Bayfield, Shimek, 1908; sand plain near Fruitland, Shimek, 1909.

**Poa pratensis* L.—In almost all non-aquatic habitats; very common.

Poa sylvestris A. Gray.—Rich woods; infrequent. DM, J, MA, VB.

Poa wolfii Scribn.—Rare. DA: Bloomfield, Pammel, 1899 (ISC).

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[8]For additional notes on these taxa see Pohl (1947) and Shinners (1944).

WAP: carboniferous sandstone, Ottumwa, Pammel, 1899 (ISC).

**Secale cereale* L.—Cultigen infrequently escaped to roadsides and waste places, probably not persistent. J, LO, MU.

**Setaria faberii* Herrm.—Although represented by only two known collections, both taken from disturbed sandy soil, this species probably is rather frequent in southeastern Iowa. J, LO.

**Setaria lutescens* (Weigel) Hubb. (*S. glauca* (L.) Beauv.).—Weed, especially of roadsides, along railways, and in other disturbed places; common.

**Setaria italica* (L.) Beauv.—Rarely escaped. LO: along RR, Muscatine Isl., Reppert, 1895. MU: sandy alluvial flat, E of Fruitland, Shimek, 1915.

**Setaria verticillata* (L.) Beauv.—Weed of waste places; frequent.

**Setaria viridis* (L.) Beauv.—Weed, especially of roadsides, and cultivated or disturbed ground; common.

Sorghastrum nutans (L.)Nash.—Prairie remnants; common.

**Sorghum sudanense* (Piper) Stapf.—Rarely escaped from cultivation. J: U.S. Hwy. 34, W of Fairfield, Gilly, 1935 (ISC).

**Sorghum vulgare* Pers.—Rarely escaped from cultivation. LE: along U.S. Hwy. 61, NW¼ 4-68-3, *3560*.

Spartina pectinata Link (*S. cynosuroides* of authors, not (L.) Roth; *S. michauxiana* Hitchc.).—Moist depressions in open, often sandy, places; frequent.

Sphenopholis intermedia Rydb. (inc. *S. pallens* (Biehler) Scribn.; *Eatonia pennsylvanica* of authors, not (Spreng.) A. Gray).—Sandy woods, wooded slopes, and prairie sloughs; infrequent. DM, LO, MU.

Sphenopholis obtusata (Michx.) Scribn.—Wooded slopes, sandy open places; infrequent. DM, MU.

Sporobolus asper (Michx.) Kunth.—Upland and sandy prairie-like areas, dry woods, roadsides, and sterile soil along railways; common. Two specimens examined (Davidson, LE, *1841;* Shimek, MU, 1922) are atypical in possessing paleas generally longer than the lemmas.

Sporobolus clandestinus (Biehler) Hitchc.—Rare. H: prairie on sand ridge, NW¼ 18-72-7, McDonald, 1935 (ISC). J: open prairie on sand ridge, NE¼ 12-72-8, McDonald, 1935 (ISC).

Sporobolus cryptandrus (Torr.) Gray.—Dry, sandy, open soil; frequent.

Sporobolus heterolepis Gray.—Prairie remnants; infrequent. MU.

Sporobolus neglectus Nash.—Rare. MU: dry soil, Wilton branch Ry. Reppert, 1895.

Sporobolus vaginaeflorus (Torr.) Wood.—Sandy soil, prairie remnants and woodland openings; infrequent. MU, VB, WASH.

Stipa spartea Trin.—Prairie remnants and sandy open soil; frequent.

Tridens flavus (L.) Hitchc. (*Triodia flava* (L.) Smyth, inc. *Triodia cuprea* Jacq.).—Sandy talus and dry open places, sometimes in sandy alluvial thickets and woods; common.

Triplasis purpurea (Walt.) Chapm. (*Triodia purpurea* Hack.).—Dry extremely sandy soil; frequent.

Tripsacum dactyloides L.—Specimens collected from railways and sloughs; infrequent. A, LE, MU.

**Triticum aestivum* L.—Cultigen frequently escaping to roadsides, barnyards, and waste places, apparently not persistent.

Zizania aquatica L.—Rare. LO: wet inlet of small pond, SW¼ 9-75-4, *3471*. MU: along Pike Run, NW¼ 9-77-3, Thorne, 1952.

Cyperaceae (Sedge Family)

Bulbostylis capillaris (L.) Clark (*Fimbristylis capillaris* (L.) A. Gray; *Stenophyllus capillaris* (L.) Britt.).—Rare. LO: wet sandy margin, Moose Lodge area, Muscatine Isl., NE¼ 4-75-2, *3939*. MU: Fruitland, Barnes & Miller, 1896.

Carex albursina Sheldon (see comment following *Carex laxiflora*).—Rich wooded, usually rocky, slopes and bluffs; infrequent. MA, MU, WASH.

Carex annectens (Bickn.) Bickn. (inc. *C. brachyglossa* Mackenz., and *C. xanthocarpa* Bickn.).—Wet margins of sloughs and other low places; infrequent. LE, MU, VB.

Carex atherodes Spreng. (inc. *C. laeviconica* Dewey).—Rare. LO: depression in sandy prairie remnant, NW¼ 4-75-2, *2123*. WAP: low marshy area adj. to Ry., Cliffland, NW¼ 11-71-13, *314*.

Carex bicknellii Britt.—Specimens collected from sandy flats, and prairie ridges; infrequent. A, LE, MU, VB. One variously annotated specimen examined (Shimek, LE, 1897) is atypical and may represent a hybrid.

Carex brevior (Dewey) Mackenz. (inc. *C. molesta* Mackenz.).—Prairie remnants, roadsides, sandy open places, occasionally in woods; common.

Carex bushii Mackenz.—Rare. DA: gray, sandy soil along a stream, Hayden, 1939 (ISC). WAP: in ditch along Hwy. 63, about 5 mi. N of Ottumwa, Hayden, 1939 (ISC).

Carex buxbaumii Wahl.—Rare. MU: damp soil, Cedar River region, Reppert, 1897. WASH: marshy area 2 mi. S of Washington, Wagenknecht, 1954.

Carex cephalophora Muhl.—Upland woods, woodland openings, wooded bluffs, slopes, and ravines, occasionally in roadside thickets; common.

Carex communis L. H. Bailey.—Rare. MU: sandy woods, Wildcat Den St. Pk., Thorne, 1953. WAP: dry woods, Cliffland, Thorne, 1950.

Carex comosa Boott.—Rare. MU: swamp, 18-78-2, Conard, 1945; marshy border of Wiese's slough, 2½ mi. SE of Atalissa, Thorne *et al.*, 1952.

Carex complanata Torr. & Hook. (inc. *C. hirsutella* Mackenz.). Specimens examined may be designated var. *hirsutella* Gleason.—Upland woods; frequent.

Carex conjuncta Boott.—Rare. DM: moist sandy roadside, SW¼ 13-72-2, *793*. J: alluvial woods, Cedar Creek, S of Fairfield, Shimek, 1930.

Carex crinita Lam.—Rare. J: along Cedar Creek, SE¼ 19-71-9, Gilly & McDonald, 1934 (ISC).

Carex cristatella Britt.—Sloughs and wet margins; frequent.

Carex crus-corvi Shuttlw.—Rare. LO: slightly grazed meadow bordering Lake Odessa, SW¼ 17-74-2, 1010; Muscatine Isl., Shimek & Myers, 1897.

Carex davisii Schw. & Torr.—Low wooded ground and occasionally in moist roadside depressions; frequent. One specimen examined (Davidson, VB, *4239*) is very nearly glabrous; this condition apparently is atypical of *C. davisii*.

Carex festucacea Schk.—Rare. LO: Big Sand Mound, Shimek, 1911 (ISC). MU: sandy flat along Cedar River, SW¼ 2, Lake Twp., Thorne, 1952; open woods on sandhills, NW¼ 7, Lake Twp., Thorne, 1952.

Carex frankii Kunth.—Rare. LE: roadside slough, NE¼ 22-67-5, *3018*. LO: slough, Lake Odessa, SW¼ 17-74-2, *687*.

Carex granularis Muhl. (inc. *C. shriveri* Britt.).—Moist woodland ravines and depressions; infrequent. LE, MU, VB.

Carex gravida L. H. Bailey.—Low woods, wooded bluffs and slopes, and roadside thickets; frequent.

Carex grayii Carey (*C. asa-grayi* L. H. Bailey).—Moist wooded ground; infrequent. LE, LO, MU.

Carex grisea Wahl.—Woods, occasionally in moist roadside areas; frequent.

Carex haydenii Dewey.—Rare. WASH: moist prairie soil, E of Riverside, Sec. 10, Iowa Twp., Wagenknecht, 1953.

Carex hirtifolia Mackenz.—Woods; frequent.

Carex hitchcockiana Dewey.—Rare. VB: rich woods along creek, 1 mi. E of Bonaparte, Thorne, 1951. WASH: rich calcareous wooded bluff of Iowa River, 4 mi. SE of Riverside, Wagenknecht, 1953.

Carex hystericina Muhl.—Moist ground; infrequent. LO, MU, WASH.

Carex interior L. H. Bailey.—Rare. MU: Barnes & Miller (ISC).

Carex jamesii Schw.—Rich woods; infrequent. MU, VB, WASH.

Carex lacustris Willd.—Rare. J: wet marshland, SE¼ 33-72-10, Gilly & McDonald, 1933 (ISC). WASH: wet ground along slough 4 mi. W of Crawfordsville, Wagenknecht, 1953.

Carex lasiocarpa Ehrh. (inc. *C. lanuginosa* Michx.).—Moist prairie remnants and other wet open soil; infrequent. A, LO, MU, VB.

Carex laxiculmis Schw. (inc. *C. copulata* (Bailey) Mackenz.).—Rare. MU: humus-covered talus, Wildcat Den St. Pk., Thorne, 1952.

Carex laxiflora Lam. (inc. *C. blanda* Dewey). The writer has followed Gleason (1952), in part, by including *C. blanda* within *C. laxiflora;* however, *C. albursina,* with its apparently more restricted habitat, characteristic leaves and pistillate scales, is excluded from the *C. laxiflora* plexus.—Woods; common.

Carex leavenworthii Dewey.—Pasture sloughs, open grassy places, upland woods, wooded bluffs, and prairie ridges; infrequent. A, DM, LE, MU, VB.

Carex lupuliformis Sartw.—Rare. LE: moist ground adj. to pond, NE¼ 14-67-5, *2890.* Many reports of *C. lupuliformis* apparently have been based on misidentifications of *C. lupulina* Muhl.

Carex lupulina Muhl.—Alluvial woods and thickets, sloughs, and roadside ditches; common. One specimen examined (Shimek, LE, 1897) may be designated var. *pedunculata* Gray.

Carex lurida Wahl.—Rare. MA: low alluvial prairie-like area, NE¼ 1-74-17, *3843.*

Carex meadii Dewey (*C. tetanica* var. *meadii* (Dewey) L. H. Bailey).—Prairie remnants, sandy open places; infrequent. A, LO. One specimen examined (Shimek, LO, 1902) is apparently atypical in possessing some spikes with less than six rows of perigynia.

Carex molesta Mackenz.—Rare. LE: 19-65-5, Fults, 1931 (ISC).

Carex muhlenbergii Schk. (*C. plana* Mackenz.).—Sandy upland woods and bluffs, open sandy areas, occasionally in prairie remnants; frequent.

Carex muskingumensis Schw.—Swales, and moist alluvial woodland, infrequent. LO, MU, WAP.

Carex normalis Mackenz.—Moist wooded bluffs, slopes, thickets, also moist roadsides; infrequent. LE, LO, MA.

Carex oligocarpa Schk.—Upland woods; infrequent. H, MU.

Carex pensylvanica Lam.—Upland woods and wooded slopes; common.

Carex rosea Schk. (inc. *C. convoluta* Mackenz.).—Woods; common.

Carex scoparia Schk.—Sloughs, swales, and pond margins; frequent.

Carex shortiana Dewey.—Low moist woods, occasionally in roadside ditches; frequent.

Carex sparganioides Muhl. (inc. *C. cephaloidea* Dewey).—Woods; infrequent. A, LE, MA, WASH.

Carex sprengelii Dewey (*C. longirostris* Torr.).—Rare. J: rich wooded slope, Woodthrush St. Pk., 5-71-8, *2108*.

Carex squarrosa L.—Rare. J: moist woodland depression, app. 1 mi. W of Fairfield, SW¼ 34-72-10, *3088*. VB: moist slough app. 5 mi. NE of Cantril, *4224*.

Carex stipata Muhl. (inc. *C. laevivaginata* (Kuekenth.) Mackenz.).—Marshy pond margins; infrequent. DM, LE, MA.

Carex stricta Lam. (*C. strictior* Dewey).—Moist margins, swales, prairie depressions; infrequent. DM, LO, MU.

Carex suberecta (Olney) Britt.—Rare. K: slough in prairie remnant, app. 2 mi. E of Webster, 77-11, *477*.

Carex tribuloides Wahl. (inc. *C. projecta* Mackenz.). Fernald (1950) has recognized both *C. tribuloides* and *C. projecta* as distinct species calling attention to apparent hybridization between the two. Likewise, Gleason (1952) has recognized both, saying of *C. projecta,* "Scarcely specifically distinct from *C. tribuloides*. . ." The present writer tentatively has placed *C. projecta* into synonomy after examining a considerable amount of material and noting that the quantitative differences used to separate these taxa grade into each other almost completely.—Sloughs, pond margins, and other moist wooded or open ground; common.

Carex trichocarpa Muhl.—Rare. LO: wet margin of pond, Conesville Marsh, Sec. 11, Oakland Twp., Thorne, 1952.

Carex typhina Michx.—Rare. DM: slough near Mississippi River, SE¼ 4-72-1, *687*. LO: low open woods bordering Keevers Lake, SW¼ 8-73-2, *1944*.

Carex vesicaria L.—Rare. WASH: moist ground along edge of marsh 2 mi. S of Washington, Sec. 32, Washington Twp., Wagenknecht, 1953.

Carex vulpinoidea Michx.—Moist meadows, roadsides, alluvial woods, prairie depressions, and slough, pond, and lake margins; common.

Cyperus acuminatus Torr. & Hook.—Slough margins, prairie depressions, moist sandy flats; infrequent. A, DA, LO.

Cyperus aristatus Rottb. (*C. inflexus* Muhl.).—Wet sandy margins; infrequent. DM, LO, MU, VB.

Cyperus diandrus Torr.—Rare. LO: marsh, NW¼ 3-76-5, *3533*.

Cyperus erythrorhizos Muhl.—Marshes, wet margins of sloughs and ponds, also on bottom mud of drying ponds; frequent.

Cyperus esculentus L.—Wet margins of sloughs, ponds, ditches, lakes; frequent.

Cyperus filiculmis Vahl.—Dry sandy soil; frequent.

Cyperus odoratus L. (*C. ferax* L. C. Rich.; *C. ferruginescens* Boeck.; *C. speciosus* of authors, not Vahl).—Wet sandy margins; infrequent. DM, LO.

Cyperus rivularis Kunth.—Wet margins and bottoms of drying ponds; infrequent. DM, MU.

Cyperus schweinitzii Torr.—Dry sandy soil; common.

Cyperus strigosus L.—Marshes, sloughs, meadows, and wet margins; common.

Dulichium arundinaceum (L.) Britt. (*D. spathaceum* (L.) Pers.).—Rare. H: boggy places, Savage, 1899. MU: swampy border of pond among old dunes, 8 mi. NW of Muscatine, Shimek, 1922; marshy east end of Wiese's Slough, 2½ mi. SE of Atalissa, 18-72-2, Thorne, 1952.

Eleocharis acicularis (L.) R. & S.—Shallow water and moist margins; frequent.

Eleocharis atropurpurea (Retz.) Kunth.—Rare. LO: low area adj. to slough, Moose Lodge, Muscatine Isl., NE¼ 4-75-2, *3318*.

Eleocharis calva Torr.—Wet ground; infrequent. DM, LO, MU, VB.

Eleocharis compressa Sulliv. (*E. acuminata* (Muhl.) Nees).—Rare. LO: low sandy area bordering road, NW¼ 16-75-2, *878*. MU: sandy flat along Cedar River, N of Simpson Bridge, Shimek, 1932.

Eleocharis obtusa (Willd.) Schultes (inc. *E. engelmannii* Steud.). *E. obtusa* and *E. engelmannii* have been traditionally regarded as full species; Gilly (1946) regarded *E. engelmannii* as a variety of *E. obtusa*. My study of these has caused me to question the significance or stability of *E. engelmannii* as even a variety.—Wet woodland depressions, shallow water and wet margins; common. One specimen examined (Davidson, LO, *665a*) possesses spikes up to

19 mm long, 6 mm greater than acknowledged in the manuals.[9]

Eleocharis palustris (L.) R. & S. (inc. *E. macrostachya* Britt.).—Shallow water and wet margins; infrequent. DM, LE, LO, VB.

Eriophorum angustifolium Honckeny (*E. polystachion* L. in part).—Rare. MU: Cedar River region, Reppert (DPM).

Fimbristylis autumnalis (L.) R. & S.—Rare. DM: low, sandy flat adj. to pond, Spring Grove area, *1652*. MU: dessiccated sandy flat (also edge of shallow pond), NW¼ 7, Lake Twp., Thorne, 1952.

Hemicarpha micrantha (Vahl) Britt.—Wet sandy margins; infrequent. LO, MU.

Scirpus americanus Pers.—Rare. LE: along RR track, 2-66-6, Fults, 1931 (ISC). J: ditch along RR, Sec. 26, Center Twp., Gilly, 1933 (ISC).

Scirpus atrovirens Willd.—Sloughs, swales, ditches, and wet margins; common.

Scirpus cyperinus (L.) Kunth (inc. *S. eriophorum* Michx. and *S. pedicellatus* Fern.).—Sloughs, pond margins, and other wet ground; frequent.

Scirpus fluviatilis (Torr.) A. Gray.—Rare. DA: wet margin of lake, Lake Wapello St. Pk., *2755*.

Scirpus hallii A. Gray.—Rare. MU: Reppert (DPM). This specimen, collected probably in the 1890's, is the only one known from Iowa.

Scirpus heterochaetus Chase.—Rare. LO: wet roadside ditch, NE¼ 19-75-2, *2727*.

Scirpus lineatus Michx.—Sloughs, ditches, and wet margins; infrequent. LE, MA, VB.

Scirpus validus Vahl. (inc. *S. acutus* Muhl.—see Beal and Monson, 1954, p. 44).—Marshes, swales, and wet margins; frequent.

Scleria triglomerata Michx.—Rare. MU: sandy desiccated margin of small pond in sand hills in NW¼ 7, Lake Twp., Thorne, 1952.

Araceae (Arum Family)

Acorus calamus L.—Marshes and river bottoms; infrequent. K, MU.

Arisaema dracontium (L.) Schott.—Usually in moist alluvial woods, occasionally in bottoms of rich wooded slopes and ravines; frequent.

Arisaema triphyllum (L.) Schott (*A. atrorubens* (Ait.) Blume).—Rich woods; common.

Symplocarpus foetidus (L.) Nutt.—Rare. MU: bog NW of Bayfield,

[9]The word *manuals*, in this paper, refers to Fernald, 1950, and Gleason, 1952.

Shimek, 1911 (ISC). Plants were still thriving at this station in 1952.

LEMNACEAE (Duckweed Family)

Lemna minor L.—Floating on surface of still water or stranded; common.

Lemna trisulca L.—Rare. MU: ponds and sloughs, Reppert, 1894.

Spirodela polyrhiza (L.) Schleid.—Floating on still water or stranded; frequent.

Wolffia[10] *columbiana* Karst.—Rare. LO: Muscatine Slough, *4414b;* pond just S of Fredonia, *4416b*. MU: Muscatine Slough, Thorne & Beal, 1951.

Wolffia punctata Griseb.—Rare. MU: Muscatine Slough, Thorne & Beal, 1951.

XYRIDACEAE (Yellow-eyed Grass Family)

Xyris torta Sm.—Rare. MU: desiccated sandy flat, NW¼ 7, Lake Twp., Thorne, 1952.

COMMELINACEAE (Spiderwort Family)

**Commelina communis* L.—Moist, shady places, especially in alluvium and urban waste places; frequent.

Commelina erecta L.—Rare, but locally abundant. LO: dry, extremely sandy soil, SE¼ 5-75-2, *854;* near Moose Lodge, Muscatine Isl., NW¼ 4-75-2, *3336, 3944*. MU: Muscatine Isl., Shimek & Myers, 1897.

Tradescantia bracteata Small.—Apparently rare except in the sandy areas along the Cedar River in Muscatine County. MU: Shimek, 1932.

Tradescantia ohiensis Raf. (*T. canaliculata* Raf.; *T. reflexa* Raf.).—Along railways and roadsides, prairie remnants, and sandy open places; common.

Tradescantia virginiana L.—Specimens collected from woods and open places along railways; infrequent. K, MA, WAP. Also reported from Washington Co. by Wagenknecht (1953).

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[10]I agree with Beal (Beal & Monson, 1954, p. 47) that "dry herbarium specimens were not identifiable beyond question . . .", and have cited only liquid-preserved specimens.

PONTEDERIACEAE (Pickerel Weed Family)

Heteranthera dubia (Jacq.) MacM. (*Zosterella dubia* (Jacq.) Small).—Shallow water and muddy margins; infrequent. DA, LE, LO, MU.

Heteranthera limosa (Sw.) Willd.—Rare. MU: ponds along the Cedar River, Reppert, 1894.

Pontederia cordata L.—Marshes and shallow margins of ponds and sluggish streams; infrequent. H, LO, MU.

JUNCACEAE (Rush Family)

Juncus acuminatus Michx.—Moist margins; infrequent. LO, MU.

Juncus balticus Willd. (*J. litorum* Rydb.).—Rare. MU: low ground, Wildcat Den, Savage, 1899.

Juncus bufonius L.—Rare. LE: Keokuk, Rolfs, 1891 (ISC); roadside, also in farmer's yard, 33-68-4, Fults, 1931 (ISC).

Juncus canadensis J. Gay.—Rare. MU: swampy border of pond among old dunes, 8 mi. NW of Muscatine, Shimek, 1922.

Juncus dudleyi Wieg.—Wet depressions in open places; infrequent. DM, LO, MU.

Juncus effusus L.—Rare. LE: in wet places, Fults, 1931 (ISC). MA: wet slough, 3 mi. N of Eddyville, Augustine, 1938 (ISC).

Juncus interior Wieg.—Usually in rather dry open soil, occasionally in open upland woods and in meadows; common.

Juncus marginatus Rostk.—Rare. MU: margin of pond, Reppert, 1892.

Juncus tenuis Willd. (*J. macer* of authors, not S. F. Gray).—Open woods, paths, pastures, waste places, dry open places, occasionally in boggy situations and moist banks; common.

Juncus torreyi Coville.—Swales, moist prairie depressions, wet margins; infrequent. DM, LO, MA, WASH.

Luzula acuminata Raf. (*L. saltuensis* Fern.; *L. vernalis* of authors, not DC.).—Rare. MU: Reppert.

LILIACEAE (Lily Family)

Allium canadense L.—Roadsides, along railways, prairie remnants, and low open woods; frequent.

**Allium fistulosum* L.—Rarely escaped from cultivation. WASH: escaped along Ry., 3 mi. E of Ainsworth, Wagenknecht, 1953.

Allium tricoccum Ait.—Rich wooded ravines; infrequent. K, MU.

**Allium vineale* L.—Rare, but locally abundant. DM: sandy roadside, commercial sand and gravel area, Spring Grove, *2168*.

**Asparagus officinalis* L.—Cultigen escaping to roadsides, along railways, and disturbed ground; common, and especially prevalent in the sandy Muscatine Isl. area.

Camassia scilloides (Raf.) Cory (*C. esculenta* (Ker.) Rob.).—Specimens from rich sandy alluvial soil, railway, and upland woods; infrequent. MU, VB, WASH.

Erythronium albidum Nutt. (*E. mesochoreum* Knerr).—Moist rich wooded slopes and ravines; frequent.

**Hemerocallis flava* L.—Very rarely escaped from cultivation. H: along County Road B, between Salem and Hillsboro, June, 1956. The specimen collected from this station was accidentally discarded.

**Hemerocallis fulva* L.—Commonly escaped from cultivation to roadsides.

Lilium michiganense Farw. (*L. canadense* of authors, not L.).—Moist depressions in prairie remnants; infrequent. K, LO, MU.

Lilium philadelphicum L. (*L. umbellatum* Pursh).—Rare. H: Mills. K: roadside, Keswick, 1897. MU: native prairie S of Wilton, Shimek, 1923.

**Lilium tigrinum* Ker.—Rarely escaped. WASH: along Ry., ¼ mi. W of Crawfordsville, Wagenknecht, 1953.

Maianthemum canadense Desf.—Rare. MU: sandy woods, Wildcat Den St. Pk., Thorne, 1953.

Melanthium virginicum L.—Rare (probably collected in moist prairie depressions). MO: Albia, Tarr, 1928 (ISC). WASH: Riverside, Pammel, 1919 (ISC).

**Ornithogalum nutans* L.—Rarely escaped. VB: Lacey-Keosauqua St. Pk., *700*.

Polygonatum canaliculatum (Muhl.) Pursh (*P. commutatum* (Schult.) Dietr. in part).—Woods, roadsides, prairie remnants, thickets; common.

Smilacina racemosa (L.) Desf.—Woods; common.

Smilacina stellata (L.) Desf.—Woods; frequent.

Smilax ecirrhata (Engelm.) S. Wats.—Rich woods; frequent.

Smilax herbacea L. (inc. *S. lasioneura* Hook.).—Woods and thickets; frequent.

Smilax hispida Muhl. (*S. rotundifolia* of authors, not L.; *S. tamnoides* L. var. *hispida* (Muhl.) Fern.). Woods, especially alluvially situated; common.

Trillium cernuum L.—Rare. MA: Oskaloosa, Pammel, 1928 (ISC).

Trillium flexipes Raf. (*T. declinatum* of authors, not Raf.; *T. gleasonii* Fern.).—Rare. MU: Pammel, 1919 (ISC). WASH: rich wooded bluff over Iowa River, Sec. 26, Iowa Twp., Wagenknecht, 1953.

Trillium nivale Riddell.—Rare. H: gravelly, richly wooded slopes, Oakland Mills St. Pk., *2047*.

Trillium recurvatum Beck.—Woods; frequent.

Uvularia grandiflora Sm. (*U. perfoliata* of authors, not L.; *Oakesia sessilifolia* of authors, not (L.) Wats.).—Rich to slightly open wooded slopes; common.

Uvularia sessilifolia L.—Rare. J: Cedar-Liberty road, SE¼ of NE¼ Sec. 4, Liberty Twp., Gilly & McDonald (ISC).

Veratrum woodii Robbins.—Apparently absent in the northern portion of the area, infrequent along rich shady calcareous banks in the southern portion. From the ratio of sterile to flowering specimens observed, I would support Deam's estimate (1940, p. 307) that this species ". . . flowers about every 4 or 5 years." VB: app. 2 mi. ESE of Bonaparte, *1803;* Lacey-Keosauqua St. Pk., *2792*.

**Yucca filamentosa* L.—Cultigen, rarely escaped to roadsides. VB: Ia. Hwy. 1, just S of entrance to Lacey-Keosauqua St. Pk., *4185*.

Dioscoreaceae (Yam Family)

Dioscorea villosa L.—Woods and thickets; common.

Amaryllidaceae (Amaryllis Family)

Hypoxis hirsuta (L.) Cov.—Woodland openings, and prairie remnants, often in rather sandy soil; frequent.

Iridaceae (Iris Family)

**Belamcanda chinensis* (L.) DC.—Cultigen, rarely escaped to roadsides. K: SE¼ 17-77-10, *1297*. MU: near Bayfield, Shimek, 1915.

**Iris pallida* Lam.—Cultigen, rarely escaped. MA: near Ry., 2 mi. N of Oskaloosa, Augustine (ISC).

Iris virginica L. (*I. versicolor* of authors, not L.—see Anderson, 1928).—Marshes, wet margins, and ditches; frequent.

Sisyrinchium angustifolium Mill.—Woods; infrequent. LE, VB, WASH.

Sisyrinchium campestre Bickn.—Prairie remnants and woodland openings; frequent.

Orchidaceae[11] (Orchid Family)

Calopogon pulchellus (Salisb.) R. Br.—Rare. MU: hillside bogs near Cedar River, Lake Twp., Reppert, 1894.

Cypripedium calceolus L. (inc. *C. parviflorum* Salisb., and *C. pubescens* Willd.).—Rare. K: woods E of Keswick, Cameron, 1897. MU: rich woodlands, Reppert, 1878.

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[11]While the orchids apparently were never abundant, the discovery of any species today is a very rare occurrence; many of those listed are probably now absent from southeastern Iowa.

Cypripedium candidum Muhl.—Rare. MU: woodlands, Reppert, 1896.

Cypripedium reginae Walt. (*C. hirsutum* of authors, not Mill.; *C. spectabile* Salisb.).—Rare. MU: bogs and damp wooded hillsides, Reppert, 1897.

Goodyera pubescens (Willd.) R. Br. (*Epipactis pubescens* (Willd.) A. A. Eaton).—Rare. MU: observed by Dr. Robert F. Thorne and myself at Wildcat Den in 1953; the single plant was not collected.

Habenaria clavellata (Michx.) Spreng. (*H. tridentata* (Muhl.) Hook.).—Rare. MU: along damp or moist banks of Cedar River, Lake Twp., MacKenzie, 1893.

Habenaria flava (L.) R. Br. (*H. virescens* (Muhl.) Spreng.).—Rare. MU: wet grassy ground, Cedar River bottoms, Salisbury Bridge region, Lake Twp., MacKenzie, 1894.

Habenaria leucophaea (Nutt.) Gray.—Rare. MU: low ground on alluvial flat NW of Bayfield, Shimek, 1908 (ISC).

Habenaria viridis (L.) R. Br. var. *bracteata* (Muhl.) Gray (*H. bracteata* (Muhl.) R. Br.).—Rare. MU: rich woods, Reppert, 1892.

Liparis liliifolia (L.) Rich.—Rare. MU: woodlands, Reppert, 1890. This species was observed by R. F. Thorne and myself at Wildcat Den in 1953; the single plant was not collected.

Liparis loeselii (L.) Rich.—Rare. MU: hillside bogs along Cedar River, Salisbury Bridge region, Lake Twp., Reppert, 1894.

Malaxis unifolia Michx. (*Microstylis ophioglossoides* (Muhl.) Nutt.).—Rare. MU: woods, MacKenzie, 1893.

Orchis spectabilis L.—Rich woods; infrequent. H, J, MU.

Spiranthes cernua (L.) Rich.—Rare. MU: boggy places, Reppert, 1894.

Spiranthes gracilis (Bigel.) Beck.—Rare. MU: Wilton, Hitchcock, 1889 (ISC).

SALICACEAE (Willow Family)

**Populus alba*[12] L.—Rarely escaped from cultivation to roadsides. MO: NE¼ 24-73-10, *619*. VB: Pittsburg, Shimek, 1902.

Populus deltoides Marsh.—Usually in alluvial woods, but occasionally on upland slopes; common.

Populus grandidentata Michx.—Woods; frequent. See *P. alba* footnote.

Populus tremuloides Michx.—Woodland margins and thickets; frequent.

Note: *Populus candicans* Ait. has been collected from Mus-

[12]Two natural stands of *Populus alba* × *grandidentata* in Van Buren County recently have been reported by Little, *et al.* 1957.

catine Co. by Reppert; since other collection data is lacking, the specimen is assumed to have been taken from cultivation.

**Salix alba* L.—Commonly cultivated and rarely escaped. J: roadside ditch, SE¼ 6-71-11, McDonald, 1935 (ISC).

Salix amygdaloides Anders.—Along streams, in wet thickets and alluvial woods; common.

**Salix babylonica* L.—Commonly cultivated and rarely escaped to moist ground. J: bank of Cedar Creek, NW¼ 31-72-10, McDonald, 1934 (ISC).

Salix discolor Muhl.—Wet ground; infrequent. LE, MU. One specimen examined (Davidson, LE, *1438*), possessing glabrous filaments—atypical for *Salix discolor*—may be a hybrid.

**Salix fragilis* L.—Commonly cultivated and rarely escaped. H: Mills.

Salix humilis Marsh. (inc. *S. tristis* Ait.).—Dry, often sandy, soil of prairie remnants and woodland openings; common. One specimen examined (Reppert, MU, 1891) possesses wide, sharply serrate leaves; C. R. Ball has annotated this: "Perhaps a hybrid of *S. humilis* × *discolor*."

Salix interior Rowlee (*S. longifolia* of Muhl. and other authors, not Lam.).—Wet margins and ditches, sand bars, alluvial woods and thickets; common.

Salix nigra Marsh.—Wet margins and alluvial woods; common.

Salix petiolaris Sm. (*S. gracilis* Anders.).—Rare. MU: Nichols, Pammel & Porter, 1927 (ISC). VB: Ball & Sample, 1898 (ISC).

**Salix purpurea* L.—Rarely escaped from cultivation. MU: banks of Mud Creek, near Muscatine City, Reppert, 1892.

Salix rigida Muhl. (*S. cordata* of authors, not Michx.; *S. missouriensis* Bebb.).—Wet margins and ditches; frequent.

Salix sericea Marsh.—Rare. H: Mt. Pleasant, Jaques, 1917 (ISC).

JUGLANDACEAE (Walnut Family)

Carya cordiformis (Wang.) K. Koch.—Woods; common.

Carya illinoensis (Wang.) K. Koch (*C. pecan* (Marsh.) Engl. & Graebn.).—Alluvial woods along major streams; rare. LO: alluvial woods along Mississippi, NE¼ 16-75-2, *4001*. MU: near "Wyoming Hills", Reppert, 1898.

Carya laciniosa (Michx. f.) Loud. (*C. sulcata* Nutt.).—Alluvial woods along major streams; infrequent. DM, LO, MU. The following putative hybrid is noted:

Carya illinoensis × *laciniosa* (= *Carya* × *nussbaumerii* Sarg.).—Rare. DM and LE: Lounsberry (ISC).

Carya ovata (Mill.) K. Koch.—Woods, usually of the upland type; common.

Carya tomentosa Nutt. (*C. alba* K. Koch).—Woods, usually of the upland type; common.

Juglans cinerea L.—Woods; common.

Juglans nigra L.—Woods, especially along streams; common.

Betulaceae (Birch Family)

Betula nigra L.—Low woods and thickets along streams; common.

Carpinus caroliniana Walt.—Wooded calcareous bluffs and slopes; infrequent. H, LE, LO, MU.

Corylus americana Walt.—Woods, woodland margins, and thickets; common.

Ostrya virginiana (Mill.) K. Koch.—Wooded ravines, slopes, and bluffs; common.

Fagaceae (Beech Family)

Quercus[13] *alba* L.—Woods; common. The following putative hybrids are noted:

Quercus alba × *macrocarpa* (= *Quercus* × *bebbiana* Schneid.).—Rare. A: upland woods, E of Moravia, Shimek, 1903. MU: dry soil, Reppert, 1895.

Quercus alba × *stellata* (= *Quercus* × *fernowii* Trel.).—Rare. LE: upland woods, app. ½ mi. W of Mooar's Station, *591, 1755;* upland woods 6 mi. W of Donnellson, Shimek, 1928.

Quercus bicolor Willd.—Alluvial woods; frequent.

Quercus imbricaria Michx.—Usually in low ground, but occasionally on higher slopes and bluffs; common, especially in the southern portion of the area. The following putative hybrid is noted:

Quercus imbricaria × *velutina* (= *Quercus* × *leana* Nutt.).—Rare. K: low, sandy, wooded area near Skunk River, SE¼ 23-75-11, *1301, 1302*. Other, less interpretable putative hybrid specimens of *Q. imbricaria* have been examined. One specimen (Davidson, K, *3090*), possesses some shallowly spinulose-toothed

[13]While typical specimens of the oaks which occur in our area are easily identified, the variable nature of the foliage of many species and the prevalence of hybridization cause *Quercus* to be a difficult genus (for a concise discussion on hybridization among the oaks see Stebbins, *et al.*, 1947). Probably many specimens considered to be one or another species actually are subtle and unrecognized hybrids (if the traditional species are valid).

leaves; this may represent the form to which A. deCandolle's *Q. imbricaria spinulosa* refers.

Quercus macrocarpa Michx.—Woods; common. In addition to that cited under *Q. alba,* the following putative hybrid is noted:

Quercus macrocarpa × *muehlenbergii* (= *Quercus* × *fallax* E. J. Palmer).—Rare. MU: Reppert, 1891.

Quercus muehlenbergii Engelm. (*Q. prinoides* and *Q. prinus* of some Iowa authors).—Calcareous bluffs and slopes; frequent. See putative hybrid cited under *Q. macrocarpa.*

Quercus palustris Muenchh.—Alluvial woods; common.

Quercus rubra L. (*Q. borealis* Michx. f.; *Q. maxima* (Marsh.) Ashe).—Wooded bluffs and slopes; common. The following putative hybrid is noted:

Quercus rubra × *velutina* (= *Quercus* × *hawkinsiae* Sudw.).—Rare. A: SW corner Sec. 20, Union Twp., Shimek, 1906.

Quercus stellata Wang.—Dry open upland woods; infrequent in the southern part of the area, apparently absent in the northern portion. A, LE. Putative hybrid with *Q. alba* is cited previously.

Quercus velutina Lam. (*Q. ellipsoidalis* of some authors, not E. J. Hill).—Woods, often in somewhat sandy soil; common. In addition to those cited under *Q. imbricaria* and *Q. rubra,* the following putative hybrids are noted:

Quercus marilandica × *velutina* (= *Quercus* × *bushii* Sarg.; *Q. marilandica* of authors, not Muenchh.).—Dry, often sandy, woods; frequent.

Quercus ellipsoidalis × *velutina* (= *Quercus* × *palaeolithicola* Trel.).—Rare. K: grazed wooded knoll along Ia. Hwy. 149, app. ½ mi. S of Webster, *1303.* This specimen possesses buds which are typical of *Q. velutina,* but the acorn resembles that of *Q. ellipsoidalis.*

Ulmaceae (Elm Family)

Celtis occidentalis L.—Woods, usually near streams; common.

Ulmus americana L.—Woods and thickets, usually along streams; common.

Ulmus rubra Muhl. (*U. fulva* Michx.).—Wooded slopes and bluffs; less common than the preceding species.

Ulmus thomasii Sarg. (*U. racemosa* Thomas).—Rare. LE: Keokuk, Shimek, 1895.

Moraceae (Mulberry Family)

**Maclura pomifera* (Raf.) Schneid.—Formerly planted for fences and windbreaks; frequently escaped.

**Morus alba* L.—Naturalized tree of woods, thickets, roadsides, and disturbed ground; common.

Morus rubra L.—Alluvial woods and wooded slopes bordering streams; frequent.

Cannabinaceae (Hemp Family)

**Cannabis sativa* L.—Weed of roadsides, railways, and waste places; frequent.

**Humulus japonicus* Sieb. & Zucc. (*H. scandens* (Lour.) Merr.).—Rare. LE: thicket adj. to road, app. ½ mi. S of Montrose, *3563*.

Humulus lupulus L. (*H. americanus* Nutt.).—Moist thickets; infrequent. DM, LE, LO, MU, VB.

Urticaceae (Nettle Family)

Boehmeria cylindrica (L.) Sw.—Moist margins and alluvial woods; infrequent. DM, LE, LO, MU.

Laportea canadensis (L.) Wedd. (*Urticastrum divaricatum* Ktze.).—Moist wooded ground; common.

Parietaria pensylvanica Muhl.—Wooded calcareous slopes and bluffs; common.

Pilea fontana (Lunell) Rydb.—Rare, or perhaps overlooked due to close resemblance with the following species. LO: very moist ground near margin of spring-fed pond, NW¼ 7-75-4, *4047*.

Pilea pumila (L.) Gray.—Moist shady banks and alluvial woods; common.

Urtica dioica L. (inc. *U. gracilis* Ait.; *U. lyallii* of authors, not S. Wats.; *U. procera* Muhl.; *U. viridis* Rydb.).—Alluvial ground and moist waste places; common.

Santalaceae (Sandalwood Family)

Comandra umbellata (L.) Nutt. (inc. *C. richardsiana* Fern.).—Prairie remnants and woodland openings; frequent.

Aristolochiaceae (Birthwort Family)

Aristolochia serpentaria L.—Rare. MU: rich woods, near "Wyoming Hills," and in Twp. 76, Reppert, 1897.

Asarum canadense L. (inc. *A. acuminatum* (Ashe) Bickn.; *A. reflexum* Bickn.).—Rich wooded slopes, ravines, and alluvium; common.

POLYGONACEAE (Buckwheat Family)

**Fagopyrum esculentum* Moench.—Rarely escaped from cultivation. MU: E of Fruitland, Shimek, 1915.

Polygonella articulata (L.) Meissn.—Rare. LO: west side of Big Sand Mound, Shimek, 1910.

Polygonum amphibium L. (inc. *P. fluitans* Eat., *P. hartwrightii* Gray, *P. natans* (Michx.) Eat.).—Rare. MU: shallow water, Muscatine Isl., Reppert, 1897.

**Polygonum aviculare* L. (inc. *P. neglectum* Bess.).—Roadsides, railways, waste places and other disturbed ground; common.

Polygonum coccineum Muhl. (*P. muhlenbergii* (Meissn.) S. Wats.).—Wet marshy places and margins; frequent.

**Polygonum convolvulus* L.—Weed of roadsides, railways, thickets, and alluvial woods; frequent.

Polygonum erectum L.—Apparently rare. MU: Reppert.

Polygonum hydropiper L.—Shallow water and wet margins of ditches, sloughs, ponds, and lakes; frequent.

Polygonum hydropiperoides Michx.—Rare. LO: cut-off ponds on alluvial flat near Parker's Landing, Shimek & Myers, 1897.

Polygonum lapathifolium L. (inc. *P. incanum* Willd.; *P. tomentosum* var. *incanum* of authors, not (Schmidt) Gurke).—Marshes, and wet margins of ponds, lakes, and streams; frequent.

**Polygonum orientale* L.—Rarely escaped. MU: waste ground, Reppert, 1891.

Polygonum pensylvanicum L.—Sloughs, moist alluvium, margins, thickets, roadsides, waste places, and other disturbed ground; common.

**Polygonum persicaria* L.—Weed of roadside ditches, and other moist disturbed ground; frequent.

Polygonum punctatum Ell. (*P. acre* HBK.).—Meadows, sloughs, roadside ditches, wet margins and ravine bottoms; common.

Polygonum ramosissimum Michx. (inc. *P. exsertum* Small).—Moist sandy soil; infrequent. LE, LO, MU.

Polygonum sagittatum L.—Marshy ground; infrequent. LO, MU.

Polygonum scandens L. (inc. *P. dumetorum* L.). Deam (1940) has doubted that *P. dumetorum* is distinct from *P. scandens,* but has granted specific status to both; Gleason (1952) has recognized the var. *dumetorum* (L.) Gl.; Blickenstaff and Gilly (1948) have combined the two taxa. Rather arbitrarily, since the number of specimens available for study was very limited, I agree with the

Blickenstaff and Gilly treatment.—Thickets, fence-rows, roadside and railway depressions, alluvial woods; frequent.

Polygonum tenue Michx.—Dry, sandy soil; infrequent. LE, LO, MU.

Polygonum virginianum L. (*Tovaria virginiana* (L.) Raf.).—Alluvial woods; frequent.

Rumex acetosella L.—Usually in sandy, open soil, especially along roadsides, also waste places; common.

Rumex altissimus Wood.—Roadside and railway depressions, moist margins and other low ground; common.

**Rumex crispus* L.—Weed in low ground of fields, pastures, roadsides, railways, margins, and waste places; common.

Rumex maritimus L. (*R. persicarioides* of authors, not L.).—Rare. LO: moist, sandy margin, Muscatine Isl., *4419*.

Rumex mexicanus Meissn. (*R. triangulivalvis* (Danser) Rech. f.).—Rare. MU: roadbed along RR, 1 mi. S of Wilton, Shimek, 1924.

**Rumex obtusifolius* L.—Rare. MU: waste grounds, fence-rows, etc., Reppert, 1890.

Rumex orbiculatus Gray (*R. britannica* of authors, not L.).—Rare. MU: Reppert, 1893.

**Rumex patientia* L.—Rare. MU: shady swampy places, Wildcat Den, Pammel, 1926 (ISC).

Rumex verticillatus L.—Moist ground; infrequent. LO, MU, WASH.

Chenopodiaceae (Goosefoot Family)

Atriplex patula L.—Apparently rare. LO: moist roadside ditch, SW¼ 14-76-5, *1477*.

**Chenopodium album* L.—Weed of roadsides, railways, fields, barnyards, and other disturbed ground; common.

**Chenopodium ambrosioides* L.—Rare. MU: Reppert, 1894.

Chenopodium berlandieri Moq.—Rare. H: Mills.

**Chenopodium botrys* L.—Rare. LE: Keokuk, 1895. MU: waste places, Muscatine City and elsewhere, Reppert, 1894.

**Chenopodium bushianum* Aellen (*C. paganum* Reichenb.).—Rare. MU: Reppert, 1895.

Chenopodium gigantospermum Aellen (*C. hybridum* of American authors, not L.).—Thickets, waste places and disturbed woodland; frequent.

**Chenopodium glaucum* L.—Rare. H: Mills. MU: Reppert, 1890.

Chenopodium leptophyllum Nutt. (inc. *C. pratericola* Rydb.).—Dry, sandy soil; frequent.

**Chenopodium murale* L.—Rare. Mu: waste places, Reppert, 1894.

Chenopodium standleyanum Aellen (*C. boscianum* Moq. of authors, not as to type).—Woods, occasionally in thickets; frequent.

**Chenopodium urbicum* L.—Rare. MU: waste places, barnyards, etc., Reppert, 1894.

Cycloloma atriplicifolium (Spreng.) Coult. (*C. platyphyllum* (Michx.) Moq.).—Dry, sandy soil; frequent.

**Kochia scoparia* (L.) Roth.—Apparently rare. MO: Ry. ballast, SW¼ 14-72-17, *3761*. WASH: waste ground in Ry. yard, Washington, Wagenknecht, 1953.

**Salsola kali* L. (*S. pestifer* A. Nels.).—Rare. MU: along Ry., Muscatine, Reppert, 1895.

AMARANTHACEAE (Amaranth Family)

Amaranthus albus L. (*A. graecizans* of authors, not L.).—Weed of roadsides, railways, disturbed prairie remnants, fields, and waste places; common.

**Amaranthus arenicola* I. M. Johnson.—Rare. MU: along Ry., Reppert, 1895.

Amaranthus graecizans L. (*A. blitoides* S. Wats.).—Weed of roadsides, railways, barnyards, waste places, and other disturbed ground; common.

**Amaranthus hybridus* L. (inc. *A. cruentus* L., and *A. paniculatus* L.).—Waste places; infrequent. H, MU.

**Amaranthus retroflexus* L.—Weed of roadsides, railways, fields, barnyards, waste places, and disturbed, sometimes marshy, ground; common.

**Amaranthus spinosus* L.—Rare. K: Hedrich, Bircher, 1925 (ISC). LE: Montrose, Pammel & Edwards, 1925.

Amaranthus tamariscinus Nutt. (*Acnida tamariscina* (Nutt.) Wood).—Rare. LE: Keokuk, Shimek, 1895. The following putative hybrid is noted:

Amaranthus tamariscinus × *tuberculatus*.—Rare. LO: moist ground, alluvial woods along Mississippi, NE¼ 16-75-2, *3998*. MA: alluvial prairie-like area, NE¼ 1-74-17, *3835*.

Amaranthus tuberculatus (Moq.) J. D. Sauer.—Marshy ground and moist margins; common. See putative hybrid cited above.

Froelichia floridana (Nutt.) Moq. (inc. *F. campestris* Small, and *F. gracilis* (Hook.) Moq.). *F. campestris* previously has been reduced from specific status. The tentative reduction of *F. gracilis*, however, is not based upon such precedent but upon a side study which failed to yield significant correlations of characters traditionally

used to separate *F. gracilis* from *F. floridana* (this study is currently being expanded).—Open sandy or sterile soil, especially abundant in railroad ballast and in old, sandy fields; common.

PHYTOLACCACEAE (Pokeweed Family)

Phytolacca americana L. (*P. decandra* L.).—Fence-rows, roadsides, thickets, old pastures, barnlots, waste places, in rich to sandy soil; frequent, particularly in the southern portion of the area.

NYCTAGINACEAE (Four-O'clock Family)

Mirabilis nyctaginea (Michx.) MacM. (*Oxybaphus nyctagineus* (Michx.) Sweet).—sandy or gravelly soil along roads and railroads; common.

AIZOACEAE (Carpet-weed Family)

**Mollugo verticillata* L.—Open sandy soil, especially of roadsides and railways; common.

PORTULACEAE (Purslane Family)

Claytonia virginica L.—Rich wooded slopes, ravines, and alluvium; common.

**Portulaca oleracea* L.—Weed of roadsides, fields, gardens, and waste places; common.

CARYOPHYLLACEAE (Pink Family)

**Agrostemma githago* L.—Rare. MU: Reppert.

Arenaria lateriflora L.—Woods; infrequent. H, J, K, MU.

Cerastium nutans Raf.—Moist banks, alluvium, and thickets, also along railways; frequent.

**Cerastium viscosum* L.—Rare. MU: sandy alluvial flat east of Cedar River, W of Bayfield, Shimek, 1903.

**Cerastium vulgatum* L.—Wooded slopes, banks, and ravines, prairie openings, and other grassy places; frequent.

**Dianthus armeria L.*—Rare. LE: bluff overlooking Mississippi, 1¼ mi. S of Montrose, Mobberly, 1952 (ISC).

**Lychnis alba* Mill.—Weed of roadsides, railways, and disturbed prairie remnants; frequent.

Paronychia canadensis (L.) Wood (*Anychia canadensis* (L.) BSP.).—Dry open woods and openings, often in sandy soil; frequent.

Paronychia fastigiata (Raf.) Fern. (*Anychia polygonoides* Raf.).—Openings in sandy woods; infrequent. LE, LO, MU, WAP.

**Saponaria officinalis* L.—Roadsides; common.

**Saponaria vaccaria* L. (*Vaccaria segetalis* (Neck.) Garcke.).—Rare. MA: 2 mi. W of Wright, Augustine, 1938.

Silene antirrhina L.—Sandy prairie remnants, dry roadsides, especially frequent in railroad ballast; common.

**Silene cserei* Baumg.—Rare. LE: dry railway cut through upland woods, SE¼ 13-66-7, *2253*.

**Silene dichotoma* Ehrh.—Rare. MO: along Hwy. 34 about ½ mi. E of Albia, Hayden, 1938 (ISC). WASH: Washington, Molison (ISC).

Silene nivea (Nutt.) Otth. (*S. alba* Muhl.).—Rare. MU: along Wilton Branch Ry. near Muscatine, Reppert, 1893.

Silene stellata (L.) Ait. f.—Woodlands, clearings, and thickets; frequent.

**Stellaria graminea* L.—Rare. J: 905 N 4th St., Fairfield, Gilly, 1935 (ISC).

Stellaria longifolia Muhl.—Rare. MU: low places, Wildcat Den, Shimek, 1924.

**Stellaria media* (L.) Cyrillo.—Weed of yards, gardens, barnyards, waste places; common.

Ceratophyllaceae (Hornwort Family)

Ceratophyllum demersum L.—Still water of marshes, ponds, ditches, and lakes; frequent.

Nymphaeaceae (Water-lily Family)

Brasenia schreberi Gmel.—Rare. MU: shallow pond in fixed dunes, NW¼ 7, Lake Twp., Thorne, 1952.

Nelumbo lutea (Willd.) Pers.—Ponds near, and still waters of, major streams, shallow lakes; frequent, often forming large stands.

Nuphar luteum (L.) Sibth. & Sm. subsp. *variegatum* (Engelm.) Beal (*N. advena* (Ait.) Ait. f.).—Ponds, lakes, and quiet water of major streams; infrequent. LO, MU.

Nymphaea tuberosa Paine (*Castalia tuberosa* (Paine) Greene).—Ponds along major streams; infrequent. H, LO, MU.

Ranunculaceae (Crowfoot Family)

Actaea pachypoda Ell. (*A. alba* of authors, not (L.) Mill.).—Rich woods; frequent.

Actaea rubra (Ait.) Willd.—Apparently rare. H: rich woods, Oakland Mills St. Pk., 71-7, *2049*.

Anemone canadensis L.—Alluvial open or wooded ground; common.

Anemone caroliniana Walt. (*A. decapetala* of authors, not Ard.).—Apparently restricted to Muscatine Island and Cedar River region, and not collected there since 1916. LO, MU.

Anemone cylindrica Gray.—Rare. MU: sandy prairie along Ry., Wilton to Moscow, Shimek, 1923; open places on old sand dunes, 8 mi. NW of Muscatine, Shimek, 1927.

Anemone quinquefolia L.—Woods; infrequent. K, MU.

Anemone virginiana L.—Wooded banks, slopes, ravines, bluffs, and alluvium, woodland openings and borders, prairie remnants; common.

Anemonella thalictroides (L.) Spach.—Wooded slopes and ravines; common.

Aquilegia canadensis L.—Rocky wooded ravine slopes, bluffs, and ledges; common.

Caltha palustris L.—Rare. MU: Skunk Cabbage Bog, NW of Bayfield, Shimek, 1916.

Clematis pitcheri T. & G.—Thickets, prairie remnants, stream banks, low open places, usually in sandy soil; common.

Clematis virginiana L. (inc. *C. missouriensis* Rydb.).—Wooded banks, ravines, woodland margins, and thickets; infrequent. H, K, MU.

**Delphinium ajacis* L. (*D. azureum* of some authors, not Michx.).—Cultigen, rarely escaped. J: Crow Creek in pasture, NW¼ 25-72-10, Gilly & McDonald, 1933 (PC).

Delphinium carolinianum Walt. (*D. azureum* Michx.). Interestingly, this southerly species has been reported from Henderson Co., Illinois (Jones, 1955). This is east of the area from which the only known specimen from southeastern Iowa was collected.—Rare. LE: hilltop, Montrose, Hookom (IWC).

Delphinium tricorne Michx.—Wooded slopes, banks, and bluffs, often collected from railway cuts; infrequent. A, DM, J, MA, VB, WAP.

Delphinium virescens Nutt. (*D. penardi* of authors, not Huth).—Sandy prairie soil; infrequent. LO, MU.

Hepatica acutiloba DC.—Moist, wooded, calcareous slopes and bluffs; common.

Hydrastis canadensis L.—Rare. H: woods, Savage, 1899. MU: Reppert, 1901.

Isopyrum biternatum (Raf.) T. & G.—Moist, rich woods; rare. H: Oakland Mills St. Pk., Thorne & Fay, 1953. MU: above Fairport, Reppert, 1892.

Myosurus minimus L.—Rare. LO: along Iowa River, 2 mi. N of Wapello, Thorne *et al.*, 1951. MU: sandy flat along Cedar River,

SW¼ 2-77-3, Thorne & Prior, 1952.

Ranunculus abortivus L.—Moist woods and thickets, occasionally in moist open places; common.

**Ranunculus acris* L.—Rare. MU: waste lot on alluvial flat S of Muscatine, Shimek, 1928.

Ranunculus fascicularis Muhl.—Prairie remnants and upland woods; infrequent. H, LO, MU.

Ranunculus flabellaris Raf. (*R. delphinifolius* Torr.).—Rare. LO: shallow water, Conesville Marsh, Sec. 11, Oakville Twp., Thorne. MU: pond near Cedar River, E of Saulsbury Bridge, Lake Twp., Thorne & Beal, 1951.

Ranunculus longirostris Godr. (*R. circinatus* of authors, not Sibth.).—Rare. DM: ditch along Mississippi, app. 6 mi. N of Burlington, Baumgartner, 1955.

Ranunculus pensylvanicus L. (*R. pennsylvanicus* of some authors).—Rare. LO: moist roadside ditch, NE¼ 19-75-2, *2719*. MU: low wet places on Muscatine Isl., Reppert, 1894.

Ranunculus recurvatus Poir.—Rare. MU: wet woods on fixed dunes, NW¼ 7, Lake Twp., Thorne, 1952; wet woods, Wildcat Den St. Pk., Thorne, 1952.

Ranunculus sceleratus L.—Wet margins and other low ground; infrequent. DM, MA.

Ranunculus septentrionalis Poir. (inc. *R. caricetorum* Greene).—Moist swales and wooded ground; common.

Thalictrum dasycarpum Fisch. & Lall.—Moist wooded ravines, slopes, and alluvium, and moist open places; common.

Thalictrum revolutum DC.—Rare. LE: U.S. Hwy. 61 cut through wooded bluff, Green Bay Twp., *2170*.

Berberidaceae (Barberry Family)

**Berberis vulgaris* L.—Rare. MU: Reppert (probably collected in late 1890's).

Caulophyllum thalictroides (L.) Michx.—Rich woods; infrequent. K, LO, MA, MU, VB.

Podophyllum peltatum L.—Woods; common.

Menispermaceae (Moonseed Family)

Menispermum canadense L.—Woods, thickets, fence-rows, especially along streams; common.

ANNONACEAE (Custard-apple Family)

Asimina triloba (L.) Dunal.—Apparently restricted to wooded alluvium, slopes, and bluffs along the Des Moines and Mississippi rivers; infrequent in the mentioned areas. LE, LO, VB.

LAURACEAE (Laurel Family)

Sassafras albidum (Nutt.) Nees.—Rare. LE: one small tree growing a short distance back from crest of bluff overlooking approach to Iowa-Missouri bridge, WSW of Keokuk, NE¼ 33-65-5, *1542*.

PAPAVERACEAE (Poppy Family)

**Argemone mexicana* L.—Rare. MU: in uncultivated field, Reppert, 1896.

Corydalis aurea Willd. I believe that nearly all Iowa reports of this species are based upon misidentification, *C. micrantha* being most frequently involved. Ownbey (1947) excludes *C. aurea* from Iowa (he did not examine material from Iowa herbaria), but cites it as close as Winnebago Co., Illinois.—Rare. VB: Lacey-Keosauqua St. Pk., Fults & Melhus, 1933 (ISC).

Corydalis curvisiliqua Engelm. subsp. *grandibracteata* (Fedde) G. B. Ownbey.—According to Ownbey (1947, p. 229), this subspecies ranges from northern Texas to southern Kansas. He considers its isolated occurence in Muscatine Co., Iowa due perhaps to " . . . a chance introduction of seeds."—Frequent in dry sandy soil of Muscatine Island and Cedar River area, perhaps absent elsewhere. LO, MU.

Corydalis micrantha (Engelm.) Gray (*C. aurea* of many Iowa authors, not Willd.).—Dry, sandy soil, and railroad ballast; frequent.

Dicentra canadensis (Goldie) Walp.—Rare. VB: rocky bank at foot of hills above Des Moines River floodplain, 6 mi. NW of Keosauqua, Hayden, 1941 (ISC).

Dicentra cucullaria (L.) Bernh.—Rich wooded slopes, ravines, and bluffs; common.

Sanguinaria canadensis L.—Rich wooded slopes and ravines; common.

CAPPARIDACEAE (Caper Family)

**Cleome serrulata* Pursh (*C. integrifolia* T. & G.).—Rare. MU: gardens and waste places, Reppert, 1891.

Cristatella jamesii T. & G.—Rare. MU: sandy bluff E of Cedar River, SE¼ 15, Lake Twp., Thorne, 1952.

Polanisia graveolens Raf. (inc. *P. trachysperma* T. & G.).—Dry sandy or gravelly soil; frequent.

CRUCIFERAE (Mustard Family)

Arabis canadensis L.—Wooded, calcareous slopes, ravines, and bluffs; infrequent. A, H, MU.

Arabis drummondii Gray (*A. confinis* Wats.).—Rare. MU: wooded bluff, Wildcat Den, Shimek, 1903 (ISC).

Arabis hirsuta (L.) Scop. (inc. *A. pycnocarpa* Hopkins).—Rare. DM: face of limestone outcrop, SE¼ 11-72-2, *948*, *974*. MU: damp soil, Cedar River region, Reppert, 1894.

Arabis laevigata (Muhl.)Poir.—Rare. MU: sandy woods (also sandstone bluff), Wildcat Den St. Pk., Thorne, 1953.

Arabis perstellata E. L. Br. (*A. dentata* (Torr.) T. & G.; inc. *A. shortii* (Fern.) Gl.).—Moist wooded alluvium and bluffs; infrequent. DM, H, LO, MU.

Armoracia aquatica (Eat.) Wieg. (*Nasturtium lacustre* Gray; *Radicula aquatica* (Eat.) Robins.).—Rare. MU: sloughs along Cedar River, Reppert, 1894.

**Armoracia rusticana* (Lam.) Gaertn. (*A. lapathifolia* Gilib.; *Nasturtium armoracia* (L.) Fries; *Radicula armoracia* (L.) Robins.).—Rarely escaped. MU: roadside and near old gardens, Reppert, 1891.

**Barbarea vulgaris* R. Br.—Naturalized weed of roadsides, railways, and waste places; common.

**Brassica juncea* (L.) Cosson.—Rare. LE: vacant lot, Keokuk, Leuckel, 1924 (ISC).

**Brassica kaber* (DC.) L. C. Wheeler (*B. arvensis* of some authors, not L.).—Weed of roadsides, railways, waste places, and other disturbed ground; frequent.

**Brassica nigra* (L.) Koch.—Weed of barnyards, roadsides, and waste places; frequent.

**Brassica rapa* L. (*B. campestris* L.).—Rare. H: Mills. J: Parsons College Campus, Gilly, 1935 (PC).

**Camelina microcarpa* Andrz.—Fields, roadsides, and railways; infrequent. H, MA, WAP.

**Capsella bursa-pastoris* (L.) Medic.—Weed of fields, barnyards, neglected yards, roadsides, railways, waste places, and other disturbed ground; common.

Cardamine bulbosa (Schreb.) BSP. (*C. rhomboidea* DC.).—Meadows, seepage slopes, wet margins and depressions; infrequent. LO, MA, MU.

Cardamine douglassii (Torr.) Britt.—Rare. MU: Reppert, 1901.

Cardamine pensylvanica Muhl. (inc. *C. arenicola* Britt., and *C. parviflora* L. var. *arenicola* (Britt.) O. E. Schulz; *C. hirsuta* of some authors, not L.). The tentative reduction of *C. parviflora* from specific status is based on a side study which failed to demonstrate correlation of characters reported to separate *C. parviflora* from *C. pensylvanica*.—Wet ground; frequent.

**Conringia orientalis* (L.) Dumort.—Rare. J: disturbed prairie remnant along Ry., NW¼ 27-73-9, *2068*.

Dentaria laciniata Muhl.—Rich woods; frequent.

Descurainia pinnata (Walt.) Britt. var. *brachycarpa* (Richards.) Fern. (*D. intermedia* (Rydb.) Daniels; *D. incisum* of authors, not Gray; *Sisymbrium canescens* of authors, not Nutt.).—Dry sandy soil, especially along railroads; frequent.

Descurainia sophia (L.) Webb (*Sisymbrium sophia* L.).—Rare. MU. Reppert.

Draba reptans (Lam.) Fern. (*D. caroliniana* Walt.).—Dry, sterile, usually sandy soil; infrequent. DM, MU.

Erysimum asperum DC.—Rare. VB: limestone bluffs, Mt. Zion, Murley, 1940 (ISC).

**Erysimum cheiranthoides* L.—Moist, disturbed ground; infrequent. H, MU.

**Erysimum repandum* L.—Rare. J: along Ry., NE¼ 30-72-9, Gilly & McDonald, 1933 (ISC).

Iodanthus pinnatifidus (Michx.) Steud. (*Thelypodium pinnatifidum* (Michx.) S. Wats.).—Rare. LO: alluvial woods along Mississippi, NE¼ 16-75-2, *4011*. MU: wooded island in Mississippi, near Muscatine, Reppert, 1891.

**Lepidium campestre* (L.) R. Br.—Weed of fields, roadsides, railways, and waste places; infrequent. K.

**Lepidium densiflorum* Schrader (*L. apetalum* of authors, not Willd.; *L. intermedium* A. Gray). Often mistaken for the next species (cotyledon position seems most reliably to distinguish the two).—Rare. H: Mills. LE: Shimek, 1897.

Lepidium virginicum L.—Weed of pastures, fields, barnlots, roadsides, and other disturbed ground; common.

**Nasturtium officinale* R. Br. (*Radicula nasturtium-aquaticum* (L.) Britten & Rendle).—Rare. DM: stream in Crapo Park, Burlington, Shimek, 1905 (ISC). LO: Dewey's Swamp, SW of Cone, Shimek, 1926 (ISC).

Rorippa islandica (Oeder) Borbas (inc. *R. hispida* (Desv.) Britt.; *Nasturtium palustre* (L.) DC.; *Radicula palustris* (L.) Moench).—Wet depressions, sloughs, margins, and ditches; common.

Rorippa sessiliflora (Nutt.) Hitchc.—Sloughs, marshes, seepage slopes, wet margins and depressions; frequent.

Rorippa sinuata (Nutt.) Hitchc. (*Nasturtium sinuatum* Nutt.; *Radicula sinuata* (Nutt.) Greene).—Rare. H: Mills.

**Rorippa sylvestris* (L.) Bess.—Rare. MU: sandy flat along E bank of Cedar River, SW¼ 2, Lake Twp., Thorne & Prior.

**Sisymbrium altissimum* L.—Weed of roadsides, railways, fields, and waste places; frequent.

**Sisymbrium officinale* (L.) Scop.—Weed of roadsides, barnlots, waste places; common.

**Thlaspi arvense* L.—Weed of roadsides, railways, waste places, usually in sterile soil; frequent.

Saxifragaceae (Saxifrage Family)

Heuchera richardsonii R. Br. (*H. hispida* of authors, not Pursh).—Prairie remnants, often in sandy soil; infrequent. A, LE, LO. The following putative hybrid is noted:

Heuchera richardsonii R. Br. × *H. americana* L. (= *Heuchera hirsuticaulis* (Wheelock) Rydb.).—Prairie remnants; infrequent. H, LO, MU.

Mitella diphylla L.—Rich wooded ravines and slopes; infrequent. H, MU.

Parnassia glauca Raf. (*P. caroliniana* of authors, not Michx.).—Rare. MU: boggy hillside, Lake Twp., Reppert, 1894.

Penthorum sedoides L.—Sloughs, ditches, and wet margins; common.

Ribes americanum Mill. (*R. floridum* L'Her.).—Rare. LO: Morning Sun, Carven, 1895 (ISC). MU: bog near base of wooded dune, 8 mi. NW of Muscatine, Shimek, 1925 (ISC).

Ribes cynosbati L.—Wooded bluffs and woodland borders; infrequent. H, MU.

Ribes hirtellum Michx. According to the manuals, southeastern Iowa is considerably out of the range of this species; Jones (1955), however, reports it as close as Menard Co., Illinois.—Rare. VB: Lacey-Keosauqua St. Pk., *723*.

Ribes missouriense Nutt.—Woods, usually on calcareous slopes, also in thickets; common.

**Ribes odoratum* Wendl.—Probably escaped from cultivation. H: Way-

land, Carver, 1895 (ISC). J: Fairfield, Pammel, 1929 (ISC). The following putative hybrid is noted:

Ribes odoratum × *americanum*.—Rare. MU: flat E of Cedar River, W of Bayfield, Shimek, 1920.

Saxifraga pensylvanica L.—Rare. MU: boggy base of wooded dune, 8 mi. NW of Muscatine, Shimek, 1928.

Hamamelidaceae (Witch-hazel Family)

Hamamelis virginiana L.—Rare. MU: Shimek, 1907 (ISC).

Platanaceae (Plane-tree Family)

Platanus occidentalis L.—Alluvial woods; common.

Rosaceae (Rose Family)

Agrimonia gryposepala Wallr.—Woods, and woodland borders; infrequent. DA, LE, LO, MU.

Agrimonia parviflora Ait.—Moist, usually open, soil; frequent.

Agrimonia pubescens Wallr.—Low woods, upland wooded slopes, woodland borders; common.

Amelanchier arborea (Michx. f.) Fern. (*A. canadensis* of authors, not (L.) Medic.).—Wooded, often rocky, slopes and bluffs, especially bordering streams; frequent. One specimen examined (Hayden, WAP, 1939, ISC) may be a hybrid with the next species.

Amelanchier interior Nielsen.—Rare. MU: Reppert, 1897; Pammel, 1919 (ISC).

Aruncus dioicus (Walt.) Fern. (*A. sylvester* of authors, not Kostel.; *Spiraea aruncus* of authors, not L.).—Rich wooded slopes; infrequent. LE, MU.

Crataegus calpodendron (Ehrh.) Medic. (*C. chapmani* (Beadle) Ashe; *C. tomentosa* of authors, not L.).—Specimens collected from wooded slopes; infrequent. H, LO, MU.

Crataegus crus-galli L.—Woods; infrequent. LE, LO, MA, MU.

Crataegus cuneiformis (Marsh.) Eggleston (*C. hannibalensis* Palmer).—Rare. DA: open woods bordering Soap Creek 3 mi. NE of Floris, Hayden, 1940 (ISC). WAP: hillside bordering Soap Creek, Sec. 19, Keokuk Twp., Hayden, 1940 (ISC). The preceding specimens were identified by E. J. Palmer.

Crataegus margaretta Ashe.—Open woods and bluffs, old pastures; frequent.

Crataegus mollis (T. & G.) Scheele (*C. coccinea* var. *mollis* T. & G.).—Woods, usually of the bottomland type; common.

Crataegus pruinosa (Wendl.) K. Koch.—Rare. WAP: Cratty & Aikman, 1929 (ISC).

Crataegus punctata Jacq. This species occasionally is confused with *C. crus-galli*.—Rare. MA: Oskaloosa, Pammel *et al.*, 1924 (ISC).

Crataegus succulenta Schrad. (inc. *C. pertomentosa* Ashe).—Rare. MU: along Lentizinger Creek, Reppert, 1894.

Filipendula rubra (Hill) B. L. Robins. (*Spiraea lobata* Gronov.).—Rare. MU: moist soil, Cedar River region, Lake Twp., MacKenzie, 1894.

Fragaria vesca L. var. *americana* Porter (*F. americana* (Porter) Britt.).—Rare. MU: rocky places at Pine Mills, Reppert, 1891.

Fragaria virginiana Duchesne (inc. *F. grayana* Vilmorin).—Open woods, prairie remnants, along roads and railways, thickets; common.

Geum canadense Jacq.—Woods and thickets; common.

Geum laciniatum Murr. (*G. virginianum* of authors, not L.).—Alluvial woods and marshy places; infrequent. DM, LE, LO, MU.

Geum vernum (Raf.) T. & G.—Rare. J: NE¼ 36-72-10, Pammel & Carter, 1928 (PC).

Physocarpus opulifolius (L.) Maxim.—Wooded slopes, ravines, and bluffs, usually in calcareous soil near streams; infrequent. DM, MU, VB.

**Potentilla argentea* L.—Rare. MU: sandy soil, 18-78-2, Conard & Anderson, 1945.

Potentilla arguta Pursh.—Prairie remnants and dry sandy soil; infrequent. DM, MA, MU.

Potentilla norvegica L. (inc. *P. monspeliensis* L.).—Roadside and railway depressions, thickets, waste places, low open woods, sandy open places; common.

**Potentilla recta* L.—Roadsides; frequent.

Potentilla rivalis Nutt. (inc. *P. millegrana* Engelm.).—Rare. LE: Keokuk, Shimek, 1895. MU: waste and cultivated grounds, 1890.

Potentilla simplex Michx. (*P. canadensis* of authors, not L.).—Roadsides, prairie remnants, woodland openings; common.

Prunus americana Marsh.—Open woods, mostly in low areas, thickets, fence-rows and brushy places; common.

Prunus hortulana Bailey.—Rare. LE: bank along Hy. near Des Moines River Bridge, 2 mi. W of Keokuk, Thorne, 1951. VB: low woods, Lacey-Keosauqua St. Pk. *1846*.

**Prunus mahaleb* L.—Rare. LE: ravine in SW corner of Keokuk near Des Moines River bridge, Conard, 1933.

**Prunus persica* (L.) Batsch.—Occasionally escaped cultigen. LO: along creek, NE¼ 1-74-3, *736*.

Prunus serotina Ehrh.—Woods, thickets, rocky bluffs, and fence-rows; common.

Prunus virginiana L.—Woods, rocky bluffs, thickets, and woodland borders; common.

**Pyrus communis* L.—Occasionally escaped cultigen. LE: wooded bluff near bridge over Des Moines River, app. 2 mi. WSW of Keokuk, *1561*.

Pyrus ioensis (Wood) Bailey (*P. coronaria* of authors, not L.; *Malus ioensis* (Wood) Britt.).—Open woods, fence-rows, thickets, and old pastures; common.

**Pyrus malus* L.—Occasionally escaped cultigen. LE: wooded bluff near bridge over Des Moines River, app. 2 mi. WSW of Keokuk, *430*.

Rosa blanda Ait. (inc. *R. subblanda* Rydb.).—Sandy open places, prairie remnants, fence-rows, thickets; infrequent. MA, MU, VB.

Rosa carolina L. (*R. humilis* Marsh.; *R. virginiana* of Iowa authors, not Mill.).—Prairie remnants, sandy open places, open upland woods, open rocky bluffs; common. The following putative hybrid is noted:

Rosa carolina × *suffulta* (= *Rosa* × *rudiuscula* Greene).—Prairie remnants, along roadsides and railways, dry woodland openings and bluffs; frequent.

**Rosa eglanteria* L. (*R. rubiginosa* L.).—Infrequently escaped cultigen. H, LE, LO.

Rosa setigera Michx.—Rare. DM: wooded bluffs, borders of woods, Burlington, Shimek, 1900. MU: Muscatine, 1894.

Rosa suffulta Greene (*R. arkansana* of authors, not Hill; *R. heliophila* Greene; *R. pratincola* Greene).—Along roadsides, railways, sandy open places; infrequent. J, MA, MU. See *R. carolina*.

The additional putative hybrid is noted[14]:

Rosa foetida Herrm. × *Rosa spinosissima* L. (= *Rosa* × *harisonii* Rivers).—MA: roadside 3 mi. S of Wright, Augustine, 1938 (ISC).

Rubus allegheniensis Porter (inc. *R. ostryifolius* Rydb.; *R. villosus* of authors, not Thunb.).—Open upland woods, thickets, woodland borders, dry brushy places; common.

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[14]Putative hybrid specimens of *Rosa* whose parentage could not be ascertained with some certainty are not included in this paper.

Rubus flagellaris Willd. (*R. canadensis* of authors, not L.; *R. villosus* of authors, not Ait.).—Dry open, or openly wooded places, usually in sandy soil; frequent.

Rubus occidentalis L.—Woodland borders, thickets, brushy places; common.

Spiraea alba DuRoi (*S. salicifolia* of authors, not L.).—Wet prairie sloughs, depressions along railways, and other moist places; infrequent. LE, MU.

Leguminosae (Legume Family)

Amorpha canescens Pursh.—Prairie remnants and openings, and dry sandy open places; common.

Amorpha fruticosa L.—Wet margins; common.

Amphicarpa bracteata (L.) Fern. (inc. *A. comosa* (L.) G. Don; *A. monoica* (L.) Ell.; *A. pitcheri* T. &. G.).—Woods, thickets, stream banks, prairie remnants, sandy open places; common.

Apios americana Medic. (*A. tuberosa* Moench).—Alluvial woods, thickets and banks along streams; infrequent. LE, LO, MU.

Astragalus canadensis L.—Prairie remnants, along roadsides and railways, occasionally along stream banks; infrequent. LE, MA, MU, VB. One specimen examined (Dole, J, 1894-1898, PC) is particularly interesting. Originally identified as *A. caryocarpus,* it has been annotated *A. adsurgens* (?). I consider the specimen to be an atypically short-racemed example of *A. canadensis.*

Astragalus crassicarpus Nutt. (inc. *A. caryocarpus* Ker., *A. mexicanus* of authors, not A. DC., and *A. trichocalyx* Nutt.).—Rare. DA: roadside prairie 4 mi. E of Floris, Hayden, 1940 (ISC).

Astragalus distortus T. & G.—Prairie remnants, and sandy open soil; infrequent. A, MU, WAP.

Baptisia leucantha T. & G.—Prairie remnants, and sandy open soil; frequent.

Baptisia leucophaea Nutt. (*B. bracteata* (Muhl.) Ell.).—Prairie remnants, and sandy open soil; infrequent. A, K, LE, LO, MA, MU.

Cassia marilandica L. (*C. medsgeri* Shafer).—Moist thickets; infrequent. LO, MU, VB, WAP.

Cercis canadensis L.—Wooded ravines, slopes, bluffs, and alluvium; common.

Chamaecrista fasciculata (Michx.) Green (*Cassia chamaecrista* of authors, not L.; *Cassia fasciculata* Michx.).—Prairie remnants, dry roadsides and railways, dry sandy open places; common. One

specimen examined (Davidson, LO, *3344*) atypically possesses rather long-stalked petiolar glands.

Crotalaria sagittalis L.—Prairie remnants and openings, dry sandy soil; frequent.

Dalea alopecuroides Willd.—Prairie remnants, railways; infrequent. A, LE, MO.

Desmanthus illinoensis (Michx.) MacMill.—Rare. Mo: disturbed prairie remnant adj. to Ry., SW¼ 14-72-7, *3762*. VB: brushy pasture, app. 2 mi. ESE of Bonaparte, *1811*.

Desmodium canadense (L.) DC. (*Meibomia canadensis* (L.) Kuntze). —Specimens collected from woodland borders and railways; infrequent. H, MA, MU.

Desmodium canescens (L.) DC.—Rare. LE: Skunk River Valley, Bartsch, 1895.

Desmodium cuspidatum (Willd.) Loud. (*D. bracteosum* (Michx.) DC.). —Rare. MU: Reppert, 1895. VB: slopes in upland woods, SE¼ 17-69-9, *3446*.

Desmodium glutinosum (Muhl.) Wood (*D. acuminatum* (Michx.) DC.; *D. grandiflorum* of authors, not (Walt.) DC.).—Rich wooded slopes and ravines; frequent.

Desmodium illinoense Gray.—Prairie remnants and along roadsides and railways; frequent. Descriptions of this species should include blue corollas (possessed by Davidson, DM, *3251,* when fresh).

Desmodium nudiflorum (L.) DC.—Rare. MU: moist, shady base of sandstone cliff, Wildcat Den St. Pk., *4331*.

Desmodium paniculatum (L.) DC. (inc. *D. dillenii* Darl.—see Isely, 1955).—Woods, thickets, and prairie remnants and openings; common.

Desmodium sessilifolium (Torr.) T. & G.—Rare. LE: dry upland woods, app. ½ mi. W of Mooar's Station, *1750;* alluvial sandflats SW of Ft. Madison, Shimek, 1923.

Gleditsia triacanthos L.—Usually in low woods and on banks and slopes along streams, also weed-like in drier and more open places, esp. old pastures, fence-rows, etc.; common.

**Glycine max* (L.) Merr. (*G. hispida* Maxim.).—Cultigen, occasionally spontaneous. MA: roadside 10 mi. S of Beacon, Augustine (ISC).

**Glycyrrhiza lepidota* Pursh.—Rarely introduced. J: Ry. switchyards, Fairfield, Gilly & McDonald (ISC).

Gymnocladus dioica (L.) K. Koch.—Alluvial woods, and wooded banks and bluffs near major streams; frequent.

Lathyrus palustris L.—Sandy alluvium; infrequent. LO, MU.

Lespedeza capitata Michx.—Prairie remnants, old sandy pastures, and other dry sandy open soil; common.

**Lespedeza cuneata* (Dumont) G. Don.—Planted as a soil-binder and doubtlessly escaped. LO: near Lake Odessa, 74-2, *1401*.

Lespedeza nuttallii Darl.—Perhaps introduced. DA: gravelly hillside, app. 1 mi. W of Floris, Hayden, 1940 (ISC).

Lespedeza repens (L.) Bart.—Rare. MA: prairie remnant, 2½ mi. SE of Tracy, Shimek, 1921. VB: open prairie top, Keosauqua St. Pk., Shimek, 1932.

**Lespedeza stipulacea* Maxim.—Dry soil in open woods, disturbed prairie remnants, roadsides, and pastures; infrequent. DA, LE, VB.

Lespedeza violacea (L.) Pers.—Upland open woods, prairie remnants and openings, exposed rocky ledges and gravelly soil; common.

Lespedeza virginica (L.) Britt.—Upland open woods, prairie remnants and openings, exposed rocky ledges and gravelly soil; frequent. One specimen examined (Shimek, WASH, 1932) is quite atypical and may represent a hybrid between *L. capitata* and *virginica*.

**Lotus corniculatus* L.—Rare. WASH: roadside app. 7 mi. SW of Washington, *4248*.

Lotus purshianus Clements & Clements (*L. americanus* (Nutt.) Bisch.; *Hosackia americana* (Nutt.) Piper; *H. purshiana* Benth.).—Rare. H: Mills.

**Medicago lupulina* L.—Weed of roadsides, railways, and waste places; common.

**Medicago sativa* L.—Escaped to roadsides and railways; common.

**Melilotus alba* Desr.—Weed of roadsides, railways, and waste places; common.

**Melilotus officinalis* (L.) Lam.—Weed of roadsides, railways, and waste places; common.

Petalostemon candidus (Willd.) Michx.—Prairie remnants and openings; frequent.

Petalostemon purpureus (Vent.) Rydb.—Prairie remnants and openings; common.

Psoralea onobrychis Nutt.—Rare. LE: Keokuk, 1895.

Psoralea tenuiflora Pursh.—Rare. LE: prairie banks E of Farmington, Shimek, 1923. VB: prairie along Ry., 2-3 mi. E of Willitt, Shimek, 1921.

**Robinia pseudoacacia* L.—Woods and roadsides; common.

Strophostyles helvola (L.) Ell. (*S. angulosa* Ell.).—Dry, open, mostly sandy soil, and railroad ballast; common.

Strophostyles leiosperma (T. & G.) Piper (*S. pauciflora* (Benth.) S. Wats.).—Dry, open, sandy soil, railroad ballast, and sandy open woods; frequent.

Tephrosia virginiana (L.) Pers.—Dry, sandy soil; infrequent. LE, LO, MU.

**Trifolium agrarium* L.—Rare. VB: Keosauqua, Secor, 1930 (ISC).

**Trifolium arvense* L.—Rare. DA: dry eroded pasture hills, near Floris, Hayden, 1939 (ISC). DM: Flint Hills St. Pk., Gilly, 1935 (ISC).

**Trifolium dubium* Sibth.—Rare. J: yard in Fairfield, Gilly, 1935 (PC).

**Trifolium hybridum* L.—Roadsides, railways, barnyards, fields, and other disturbed ground; frequent.

**Trifolium pratense* L.—Roadsides, railways, fields, barnyards, other disturbed ground; common.

**Trifolium procumbens* L.—Rare. H: upland woods near road, Geode St. Pk., *2436*. LE: upland woods, SE¼ 29-66-6, *2306*.

Trifolium reflexum L.—Sandy prairie remnants; infrequent. LO, MU.

**Trifolium repens* L.—Roadsides, railways, pastures, fields, yards, and other disturbed places; common.

**Trifolium resupinatum* L.—Apparently introduced in lawn seed. J: yard in Fairfield, Gilly, 1935 (ISC).

Vicia americana Muhl.—Rare. WAP: open places along Ry., N of Eldon, Shimek, 1902.

**Vicia villosa* Roth.—Rare. MU: sand plain, near Fruitland, Shimek, 1909. WASH: along road N of Kalona, Shimek, 1928.

Linaceae (Flax Family)

Linum medium (Planch.) Britt. var. *texanum* (Planch.) Fern.—Rare. DM: Burlington, Pammel (ISC). LE: woods near Mooar, Mitchell (ISC).

Linum sulcatum Riddell.—Rare. H: Mills. MU: sandy soils, Cedar River region, Shimek, 1924.

**Linum usitatissimum* L.—Rare. H: Mills. LE: Keokuk, Shimek, 1895.

Oxalidaceae (Wood-Sorrel Family)

Oxalis europaea Jord. (*O. corniculata* of authors, not L.; *O. cymosa* Small).—Weed of prairie remnants, fields, roadsides, thickets, open woods, and waste places; common.

Oxalis stricta L. (*O. filipes* of some authors, not Small).—Roadsides, railways, disturbed prairie remnants; frequent.

Oxalis violacea L.—Prairie remnants and openings, woodland borders; frequent.

GERANIACEAE (Geranium Family)

Geranium carolinianum L.—Dry sandy soil; frequent.

Geranium maculatum L.—Woods, cut-over areas, and thickets bordering woods; common.

ZYGOPHYLLACEAE (Caltrop Family)

**Tribulus terrestris* L.—Sandy disturbed ground; infrequent. LE, MU.

RUTACEAE (Rue Family)

Ptelea trifoliata L.—Woods along streams, rocky, brushy or wooded bluffs, neglected sandy places; frequent.

Xanthoxylum americanum Mill.—Woods, thickets, and brushy woodland openings; common.

SIMAROUBACEAE (Quassia Family)

**Ailanthus altissima* (Mill.) Swingle (*A. glandulosa* Desf.).—Spread from cultivation; common in urban neglected places; rare in rural waste places.

POLYGALACEAE (Milkwort Family)

Polygala cruciata L.—Rare. MU: sandy hills near Cedar River, Lake Twp., Reppert, 1896.

Polygala incarnata L.—Rare. MU: old prairie sand dune, 7 mi. NW of Muscatine, Shimek, 1929.

Polygala sanguinea L. (*P. viridescens* L.).—Prairie remnants and openings, open woods, meadows; frequent.

Polygala senega L.—Rare. MU: open woods, 1890; Ry. roadbed, 5 mi. N of Summit, Shimek, 1924.

Polygala verticillata L.—Prairie remnants and openings, sandy open places; infrequent. H, LO, MA, MU, WASH.

EUPHORBIACEAE (Spurge Family)

Acalypha gracilens Gray.—Rare. LE: Keokuk, Shimek, 1895. MU: NW¼ 7, Lake Twp., Thorne, 1952.

Acalypha rhomboidea Raf.—Usually in moist margins, alluvial woods, and open places, less frequently in drier weedy ground; common.

Acalypha virginica L.—Roadsides, woods, stream banks, and slough margins; common.

**Croton capitatus* Michx.—Rare. J: Pierson, 1937. LE: Keokuk, Shimek, 1895.

Croton glandulosus L.—Dry sandy soil; frequent.

**Croton monanthogynus* Michx.—Rare. VB: dry sandy/rocky ground, Lacey-Keosauqua St. Pk., *3603*.

**Croton texensis* (Klotzsch) Muell.—Rare. MU: along Ry., Muscatine, Reppert, 1897.

Euphorbia corollata L.—Prairie remnants, roadsides, and dry, sandy soil; common.

**Euphorbia cyparissias* L.—Rare. H: J. Mills. MU: near old habitations, in gardens, cemeteries, etc., Reppert.

Euphorbia dentata Michx. (*Poinsettia dentata* (Michx.) Small). Only questionably distinct from *E. heterophylla*.—Roadsides and railways, disturbed prairie remnants; common.

Euphorbia dictyosperma Fisch. & Mey. (*E. arkansana* Norton).—Rare. MU: sand along Ry. E of Adams, Shimek, 1913; sandy open flat near Salisbury Bridge, Shimek, 1925.

Euphorbia geyeri Engelm. (*Chamaesyce geyeri* (Engelm.) Small).—Sandy soil; infrequent. LO, MU.

Euphorbia glyptosperma Engelm. (*Chamaesyce glyptosperma* (Engelm.) Small).—Rare. LO: Big Sand Mound, Shimek, 1924. MU: prairie sand dune, N of Bayfield, Shimek, 1926.

Euphorbia heterophylla L. (*Poinsettia heterophylla* (L.) Klotzsch & Garcke). Only questionably distinct from *E. dentata*.—Prairie remnants, and moist open places; infrequent. H, LO, MU.

Euphorbia hexagona Nutt.—Sandy soil; infrequent. LO, MU.

Euphorbia maculata L. (*E. nutans* Lag.; *E. preslii* Guss.; *Chamaesyce maculata* (L.) Small; *C. preslii* (Guss.) Arthur).—Roadsides, railways, fields, and sandy soil; common.

**Euphorbia marginata* Pursh.—Rare. H: J. Mills.

Euphorbia obtusata Pursh (*Tithymalus obtusata* (Pursh) Klotzsch & Garcke).—Rare. MA: deep soil 3 mi. N of Eddyville, Augustine 1938 (ISC).

**Euphorbia peplus* L. (*Tithymalus peplus* (L.) Hill).—Rare. MU: F. Reppert, 1892.

Euphorbia supina Raf. (*E. maculata* of some authors, not L.; *Chamaesyce supina* (Raf.) Moldenke).—Weed of roadsides, railways, pastures, cultivated ground, and other disturbed places; common.

Callitrichaceae (Water-Starwort Family)

Callitriche heterophylla Pursh.—Rare. MU: pond in creek valley E of Moscow, Shimek, 1917 (ISC).

Anacardiaceae (Cashew Family)

Rhus aromatica Ait. (*R. canadensis* Marsh; *R. triloba* of some Iowa authors).—Dry woods, rocky wooded bluffs and slopes, sandy open places and thickets; common.

**Rhus copallina* L.—Notes on the specimen cited below indicate that plants had spread from a cultivated stand. VB: open prairie top, Keosauqua St. Pk., Shimek, 1932.

Rhus glabra L.—Open woods and woodland borders, thickets, roadsides, railways, old pastures; common.

Rhus radicans L. (*R. toxicodendron* of some authors, not L.).—Woods, roadsides, thickets, waste places; common.

Celastraceae (Staff-tree Family)

**Celastrus orbiculatus* Thunb. (*C. articulatus* Thunb.).—Rare. MA: apparently established in low woods bordering creek, Lake Keomah St. Pk., 556.

Celastrus scandens L.—Woods, thickets, and fence-rows; common.

Euonymus atropurpureus Jacq.—Woods; frequent.

Staphyleaceae (Bladdernut Family)

Staphylea trifolia L.—Moist, often rocky, woods and thickets; frequent.

Aceraceae (Maple Family)

Acer negundo L.—Bottomland woods, also a weed along fence-rows, in old pastures, and other neglected places; common.

Acer saccharinum L.—Bottomland woods; common.

Acer saccharum Marsh. (inc. *A. nigrum* Michx. f.).—Rich, wooded slopes, bluffs, and ravines; common.

Hippocastanaceae (Buckeye Family)

Aesculus glabra Willd.—Woods; most common in the southern counties.

Balsaminaceae (Touch-me-not Family)

Impatiens capensis Meerb. (*I. biflora* Walt.).—Moist, usually shady soil; frequent.

Impatiens pallida Nutt.—Moist wooded soil; frequent.

Rhamnaceae (Buckthorn Family)

Ceanothus americanus L.—Prairie remnants and openings, dry upland woods; common.

Ceanothus ovatus Desf.—Rare. H: Wayland, Carver, 1895 (ISC). VB: Lacey-Keosauqua St. Pk., Fults & Melhus, 1933 (ISC).

**Rhamnus cathartica* L.—Presumed escaped. VB: Aikman, 1928 (ISC).

Rhamnus lanceolata Pursh.—Low woods, wooded, often calcareous, banks, slopes, and bluffs; common.

VITACEAE (Grape Family)

Ampelopsis cordata Michx.—Rare. LE: wooded bluff along Des Moines River near approach to bridge, app. 2 mi. WSW of Keokuk, *1549*.

Parthenocissus quinquefolia (L.) Planch. (*Psedera quinquefolia* (L.) Greene).—Woods, thickets, and fence-rows; common.

Parthenocissus vitacea (Knerr) Hitchc. (*P. inserta* of authors, not (Kerner) K. Kritsch).—Rare. MU: deeply wooded slope of dune, 8 mi. NW of Muscatine, Shimek, 1925.

Vitis[15] *cinerea* Engelm.—Woods, usually of bottomland type, often in rather sandy soil; frequent.

Vitis riparia Michx. (*V. vulpina* of authors, not L.).—Woods, thickets, fences, woodland borders, especially in moist ground near streams; common.

Vitis vulpina L. (*V. cordifolia* Lam.).—Woods and thickets; infrequent. LE, VB.

TILIACEAE (Linden Family)

Tilia americana L.—Woods; common.

MALVACEAE (Mallow Family)

**Abutilon theophrastii* Medic. (*A. avicennae* Gaertn.).—Weed of fields, roadsides, and other disturbed ground; common.

**Althaea rosea* Cav.—Cultigen, frequently escaped to roadsides.

Callirhoe involucrata (T. & G.) Gray.—Rare. LE: along roadside, U.S. Hwy. 61, SE¼ 7-68-2, *2173*.

Callirhoe triangulata (Leavenw.) Gray.—Rare. DA: M.F. & T.J. Fitzpatrick (ISC).

Hibiscus militaris Cav.—Wet muddy and marshy ground along major streams; frequent.

**Hibiscus trionum* L.—Weed of roadsides, fields, barnyards, waste places, and other disturbed ground; common.

**Malva neglecta* Wallr. (*M. rotundifolia* of some authors, not L.).—Weed of fields, barnyards, roadsides, waste places; common.

**Malva sylvestris* L.—Rarely escaped garden cultigen. K: Keswick, Robertson, 1898. MU: about buildings, Muscatine, Reppert, 1891.

Malvastrum angustum Gray.—Rare. MU: river bank near Montpelier, Reppert, 1895.

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[15]One sterile specimen examined (Davidson, LO, *1408*) may represent *Vitis palmata* Vahl. This species is reported by Jones (1955) from only the extreme southern portion of Illinois but is cited from SE Iowa by Fernald (1950).

**Sida spinosa* L.—Weed of fields, fence-rows, railways, roadsides, and waste places; frequent.

GUTTIFERAE (St. John's-wort Family)

Hypericum drummondii (Grev. & Hook.) T. & G.—Rare. VB: Lacey-Keosauqua St. Pk., Fults, 1933 (ISC).

Hypericum majus (A. Gray) Britt.—Moist sandy situations; infrequent. LO, MU.

Hypericum mutilum L.—Moist meadows, depressions, margins, seepage slopes, and marshes; frequent.

**Hypericum perforatum* L.—Disturbed open places; infrequent. H, LO, MA.

Hypericum prolificum L. (*H. spathulatum* (Spach) Steud.).—Woods, woodland openings and margins, brushy cut-over areas, exposed road-cuts; frequent, especially in the southern counties.

Hypericum punctatum Lam. (*H. maculatum* Walt.).—Prairie remnants and openings, open upland woods and borders, dry cut-over areas, and sandy roadsides; common.

Hypericum pyramidatum Ait. (*H. ascyron* of American authors, not L.). —Moist banks, depressions, and ditches; infrequent. H, LE, MU.

Hypericum sphaerocarpum Michx. (*H. cistifolium* of authors, not Lam.). —Prairie remnants, moist wooded or open ground, especially in sandy soil; common. Flowers of one specimen examined (Davidson, LE, *2250*) are atypically tri-stigmate.

Hypericum virginicum L. (*Elodes campanulata* of authors, not (Walt.) Wat. & Coult.; *Triadenum virginicum* (L.) Raf.).—Rare. MU: boggy marsh at base of sandy bluff E of Cedar River, SW¼ 14, Lake Twp., Thorne, 1952.

CISTACEAE (Rockrose Family)

Helianthemum bicknellii Fern. (*H. majus* sense of BSP., *Lechia major* L.).—Dry prairie remnants and openings, dry sandy open places; frequent.

Helianthemum canadense (L.) Michx.—Rare. MU: sandy open woods along Cedar River, Reppert, 1892.

Lechea stricta Leggett.—Rare. MU: dry sandy knoll near Nichols (also Cedar River Region) Reppert, 1895.

Lechea tenuifolia Michx.—Sterile crests of bluffs, and exposed dry sandy places; infrequent. H, LO, MU, VB, WAP.

Lechea villosa Ell.—Rare. J: dry pasture, SW¼ 35-71-8, McDonald, 1946 (PC). LE: prairie banks E of Farmington, Shimek, 1923.

VIOLACEAE[16] (Violet Family)

Viola incognita Brainerd.—Rare. MU: rocky sandstone talus, Wildcat Den Pk., Shimek, 1935.

Viola lanceolata L.—Apparently frequent in or about Lake Twp., Muscatine Co., rare or absent elsewhere. MU: moist, sandy meadow in fixed dunes, NW¼ 7, Lake Twp., Thorne, 1952. The following putative hybrid is noted:

V. lanceolata L. subsp. *lanceolata* × *V. pallens* (Banks) Brainerd subsp. *pallens*.—MU: bog among fixed dunes, 8 mi. NW of Muscatine, Newbro, 1935.

Viola macloskeyi Doyd. subsp. *pallens* (Banks) M. S. Baker (*V. pallens* (Banks) Brainerd).—Rare. MU: bog among fixed dunes 8 mi. NW of Muscatine, Shimek, 1935. See putative hybrid cited under *V. lanceolata*.

Viola missouriensis Greene.—Woods and openings; infrequent. A, DM, K, LE, MU. See putative hybrid cited under *V. sororia*.

Viola nephrophylla Greene.—Specimens collected from prairie remnant, bog, and upland woods; infrequent. MU, VB.

Viola papilionacea Pursh.—Woods, usually in moist soil, and grassy open places; common. See putative hybrids cited under *V. pedatifida* and *V. sororia*.

Viola pedata L.—Open woods and grassy openings, often in sandy soil; frequent.

Viola pedatifida G. Don.—Prairie remnants; infrequent. A, LO, MU. The following putative hybrid is noted (see also *V. sagittata*):

V. pedatifida × *sororia*.—LO: app. 1 mi. E of Cotter, *4135*. MU: F. Reppert, 1878.

Viola pensylvanica Michx. (*V. eriocarpa* Schw.; *V. scabriuscula* Schw.).—Moist woods; frequent.

Viola pubescens Ait.—Rare. VB: Lacey-Keosauqua St. Pk.

Viola rugulosa Greene.—Rare. MU: Wildcat Den, Shimek, 1924.

Viola sagittata Ait.—Prairie remnants and openings; infrequent. LO, MU. The following putative hybrid is noted (see also *V. sororia*):

V. sagittata × *pedatifida*.—MU: alluvial prairie SE of Salisbury Bridge, Shimek, 1924.

Viola sororia Willd.—Woods and grassy borders; common. The following putative hybrids are noted:

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[16]All specimens of Violaceae have been determined or annotated by Dr. Norman Russell.

V. sororia × *missouriensis*.—VB: Lacey-Keosauqua St. Pk., 709.

V. sororia × *papilionacea*.—J: near Cedar Creek, NE¼ 19-72-11, Gilly & McDonald (ISC).

V. sororia × *sagittata*.—MU: native prairie along Ry., 2 mi. S of Wilton, Shimek, 1924.

**Viola striata* Ait.—Rare. VB: growing along a roadside bank, Keosauqua (ISC).

**Viola tricolor* L.—Rarely escaped cultigen. J: C. Campbell, 1925 (ISC).

Viola viarum Pollard.—Rare. H: J. Mills.

Cactaceae (Cactus Family)

Opuntia humifusa Raf. (*O. compressa* (Salisb.) Macbr. in part; *O. rafinesquii* Engelm.).—Dry sandy soil; infrequent in Muscatine Island and Cedar River areas, perhaps absent elsewhere. LO, MU.

Lythraceae (Loosestrife Family)

Ammannia coccinea Rottb. (*A. latifolia* of authors, not L.).—Wet margins; infrequent. DM, LO, MU.

Cuphea petiolata (L.) Koehne.—Dry open soil and woodland borders; infrequent. DA, J, LE.

Lythrum dacotanum Nieuw. (*L. alatum* of authors, not Pursh).—Sloughs, ditches, moist prairie depressions, and moist margins; common.

Peplis diandra Nutt.—Shallow still water, or stranded; infrequent. LE, LO, MU.

Rotala ramosior (L.) Koehne.—Wet margins; infrequent. DM, H, LO, MU.

Melastomataceae (Melastoma Family)

Rhexia virginica L.—Rare. MU: moist sandy meadow in fixed dunes, NW¼ 7, Lake Twp., Thorne, 1952.

Onagraceae (Evening-Primrose Family)

Circaea alpina L.—Rare. MU: wet ledge, Wildcat Den, Barnes & Miller, 1896.

Circaea quadrisulcata (Maxim.) Franch. & Sav. (*C. lutetiana* of authors, not L.).—Woods; common.

Epilobium coloratum Muhl.—Wet margins of ditches, sloughs, and other wet ground; infrequent. DM, LO, MU.

Gaura biennis L.—Prairie remnants, roadsides, railways, and open sandy places; frequent.

**Gaura parviflora* Dougl.—Rare. LE: Keokuk, Pammel & Mitchell, 1918 (ISC).

Ludwigia alternifolia L.—Wet depressions and margins; infrequent. DM, LE, LO, MU.

Ludwigia palustris (L.) Ell.—Wet margins; infrequent. DM, MU.

Ludwigia polycarpa Short and Peter.—Marshy places and wet margins; infrequent. LE, LO.

Oenothera[17] *biennis* L. (*O. muricata* of some authors, not L.; inc. *O. parviflora* L., and *O. strigosa* (Rydb.) MacKenzie & Bush).—Weed of roadsides, railways, and other open places; common. Two specimens examined (Davidson, DM, *3232,* and LO, *657*) are atypical and may be of hyrid origin.

Oenothera laciniata Hill.—Prairie remnants and sandy open soil; frequent.

Oenothera pilosella Raf. (*O. fruticosa* of authors, not L.; *O. pratensis* (Small) B. L. Robinson).—Prairie remnants and sandy open soil; infrequent. H, LO, MU.

Oenothera rhombipetala Nutt.—Dry, extremely sandy soil; infrequent, but often locally abundant. DM, LE, LO, MU.

**Oenothera speciosa* Nutt.—Rare. VB: roadside near entrance to Lacey-Keosauqua St. Pk., *4184.*

Haloragaceae (Water-milfoil Family)

Myriophyllum exalbescens Fern. (*M. spicatum* of authors, not L.).—Rare. MU: pond near Cedar River, Salisbury Bridge region, Lake Twp., Reppert, 1894.

Myriophyllum pinnatum (Walt.) BSP. (*M. scabratum* Michx.).— Rare. LE: shallow water, and stranded on margin of small pond, app. 1½ mi. WSW of Ft. Madison, *2882.* MU: in ponds on Muscatine Isl., MacKenzie, 1894.

Proserpinaca palustris L.—Rare. MU: margin of pond near Cedar River, E of Saulsbury Bridge, Lake Twp., Thorne & Beal, 1951.

Araliaceae (Ginseng Family)

Aralia nudicaulis L.—Moist wooded slopes, ravines, and bluffs; infrequent. A, H, LO, MA, MU.

Aralia racemosa L.—Rich woods; frequent.

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[17]For a brief and interesting review of the complexity of this genus, see Cleland, 1944.

Panax quinquefolius L. (*Aralia quinquefolia* (L.) Dec. & Planch.).—Rich woods; infrequent. H, MU.

UMBELLIFERAE (Parsley Family)

Angelica atropurpurea L.—Rare. MU: slashes, Muscatine Isl., Reppert, 1891.

Chaerophyllum procumbens (L.) Crantz.—Moist, shady, alluvial ground; frequent, often forming dense stands.

Cicuta bulbifera L.—Rare. MU: marsh 2 mi. E of Atalissa, NW¼ 18, Moscow Twp., Thorne *et al.*, 1952.

Cicuta maculata L.—Wet prairie depressions, meadows, marshes, and ditches; frequent.

**Conium maculatum* L.—Waste places; infrequent. H, VB.

Cryptotaenia canadensis (L.) DC.—Woods and thickets; common.

**Daucus carota* L.—Weed of roadsides and waste places; common.

**Foeniculum vulgare* Mill.—Rare. MA: Oskaloosa, Pammel *et al.*, 1928 (ISC).

Eryngium yuccifolium Michx.—Prairie remnants; infrequent. LE, LO, MU, WAP.

Heracleum lanatum Michx. (*H. maximum* Bartr.).—Rare. VB: alluvial thickets, along Ia. Hwy. 2, Des Moines Twp., *4417*.

Osmorhiza claytonii (Michx.) C. B. Clark.—Woods; common.

Osmorhiza longistylis (Torr.) DC.—Woods; common.

Oxypolis rigidior (L.) Raf.—This species is to be sought in marshy ground; rare. MU: F. Reppert.

**Pastinaca sativa* L.—Weed of roadsides, railways, and waste places; common.

Perideridia americana (Nutt.) Reichenb. (*Eulophus americanus* Nutt.).—Rare. J: along C. B. & Q. Ry., Gilly & McDonald, 1933 (ISC).

Polytaenia nuttallii DC. (*Pleiotaenia nuttallii* (DC.) C. & R.).—Rare. MU: prairie along Ry., near Wilton Junction, Anderson, 1947.

Sanicula canadensis L. (*S. marilandica* of Iowa authors, not L.; *S. marilandica* var. *canadensis* (L.) Torr.).—Woods and thickets; common.

Sanicula gregaria Bickn.—Woods; common.

Sium suave Walt. (*S. cicutaefolium* Schrank).—Marshy ground; infrequent. LO, MU.

**Spermolepis inermis* (Nutt.) Math. & Const.—Rare. MU: Ry., near Montpelier, Barnes, 1895.

Taenidia integerrima (L.) Drude.—Open woods, rocky bluffs, and banks; infrequent. DM, H, LE, MU.

Thaspium barbinode (Michx.) Nutt.—Alluvial woods, and wooded slopes and bluffs; frequent.

Zizia aurea (L.) Koch.—Prairie remnants, thickets, and open woods; frequent.

CORNACEAE (Dogwood Family)

Cornus alternifolia L.—Rich wooded calcareous banks, slopes, and bluffs; frequent.

Cornus drummondii Meyer (*C. asperifolia* of authors, not Michx.).—Woods and thickets, most often in moist soil; common.

Cornus obliqua Raf. (*C. amomum* of authors, not Mill.; *C. purpusi* Koehne; *C. sericea* L.).—Thickets along wet margins; infrequent. H, MA, MU.

Cornus racemosa Lam. (*C. candidissima* of authors, not Mill.; *C. paniculata* L'Her.).—Woods and thickets; common.

Cornus rugosa Lam. (*C. circinata* L'Her.).—Rare. J: wooded limestone bluffs along Skunk River, SE¼ 12-72-8, McDonald, 1934 (ISC).

**Cornus stolonifera* Michx.—Rare. H: wet places, Mt. Pleasant, Tracy, (IWC). This specimen may have been taken from cultivation—the species is included here with some misgivings.

PYROLACEAE (Wintergreen Family)

Monotropa hypopithys L. (*M. lanuginosa* Michx.).—Rare. LE: ravine, app. ½ mi. W of Mooar's Station, SW¼ 4-65-5, *594*.

Monotropa uniflora L.—Rare. MU: growing in decomposing vegetable matter, Reppert, 1878.

Pyrola elliptica Nutt.—Rare. MU: woodlands in damp rich soil, Reppert, 1894.

ERICACEAE (Heath Family)

Gaylussacia baccata (Wang.) K. Koch (*G. resinosa* Torr. & Gray).—Rare. MU: sandy, open woods on knoll, Wildcat Den St. Pk., Thorne, 1952.

PRIMULACEAE (Primrose Family)

Androsace occidentalis Pursh.—Dry sterile, usually sandy, soil; infrequent. DM, MU, WAP.

Dodecatheon meadia L.—Prairie remnants and openings; infrequent. LO, MU, WASH.

Lysimachia ciliata L. (*Steironema ciliatum* (L.) Raf.).—Moist ground; common.

Lysimachia hybrida Michx. (*Steironema lanceolatum* (Walt.) Gray, and var. *hybridum* (Michx.) Gray).—Wet ground; infrequent. LO, MU.

**Lysimachia nummularia* L.—Rare. H: bank of Skunk River, Oakland Mills St. Park, *4376*. MU: SE of Salisbury Bridge, Cedar River region, Shimek, 1927.

Lysimachia quadriflora Sims (*Steironema quadriflorum* (Sims) Hitchc.). —Rare. MU: SE of Salisbury Bridge, Cedar River region, Shimek, 1927.

Lysimachia terrestris (L.) BSP.—Rare. MU: ponds north of Bayfield, Shimek, 1909.

Lysimachia thyrsiflora L. (*Naumbergia thyrsiflora* (L.) Duby).—Rare. MU: island opposite Montpelier, Reppert.

Ebenaceae (Ebony Family)

Diospyros virginiana L.—Rare. VB: A. Hayden, 1940 (ISC). This specimen bears Dr. Hayden's inscription: "on the east side of the Des Moines River above . . . Bentonsport; colonies of young trees are springing up around old ones which are regarded by lifetime residents as part of native woodland."

Oleaceae (Olive Family)

Fraxinus americana L.—Wooded slopes and bluffs; common.

Fraxinus nigra Marsh. (*F. sambucifolia* Lam.).—Alluvial woods; infrequent. LO, MU.

Fraxinus pennsylvanica Marsh. (inc. *F. lanceolata* Borkh.; *F. pubescens* Lam.).—Bottomland woods; common.

Fraxinus quadrangulata Michx.—Infrequent in rich wooded bluffs along Mississippi River from Des Moines Co. southward, possibly absent elsewhere. DM, LE.

Gentianaceae (Gentian Family)

Gentiana andrewsii Griseb.—Wet depressions, sloughs, and boggy places; infrequent. K, MU.

Gentiana crinita Froel.—Rare. MU: boggy marsh at base of sandy bluff E of Cedar River, Sec. 15, Lake Twp., Thorne *et al.*, 1952.

Gentiana flavida Gray.—Depressions in prairie remnants; infrequent. J, LE, MU, VB.

Gentiana puberula Michx.—Rare. MU: dry copses, Reppert, 1892.

Gentiana quinquefolia L.—Rare. H: dry wooded slope, Geode St. Pk., *1586a*.

Gentiana saponaria L.—Rare. H: J. Mills, 1897 (ISC). J: damp prairie along Ry., NE¼ 28, Buchanan Twp., McDonald (ISC).

Sabatia campestris Nutt.—Rare. LE: 33-68-4, J. Fults, 1931 (ISC).

Apocynaceae (Dogbane Family)

Apocynum androsaemifolium L.—Specimens collected from railways and prairie openings; infrequent. H, MU, VB. The following putative hybrid is noted:

Apocynum androsaemifolium × *Apocynum sp.* (= *Apocynum* × *medium* Greene).—Roadsides, railways, prairie remnants; frequent.

Apocynum cannabinum L.—Roadsides, railways, woodland openings, thickets; common.

Apocynum sibiricum Jacq.—Roadsides and railways; infrequent. A, K, MU.

**Vinca minor* L.—Rarely escaped cultigen. J: Parsons College Campus, Fairfield, Traer, 1936 (PC).

Asclepiadaceae (Milkweed Family)

Asclepias amplexicaulis Sm.—Dry, sandy soil; infrequent, but often locally abundant. DM, LO, MU.

Asclepias exaltata L. (*A. phytolaccoides* Pursh).—Rare. MU: upland woods SW of Muscatine, Shimek, 1911 (ISC).

Asclepias hirtella (Pennell) Woodson (*Acerates floridana* of authors, not (Lam.) Hitchc.; *Acerates hirtella* Pennell).—Meadows, old pastures, prairie remnants, sandy open places; frequent.

Asclepias incarnata L.—Marshy margins, sloughs, ditches; common.

Asclepias ovalifolia Decne.—Rare. VB: Keosauqua St. Pk., McDonald, 1940 (PC).

Asclepias purpurascens L.—Rare. LE: roadside, SE¼ 13-66-7, *2245*. MU: Sweetland Creek, Conard & Anderson, 1945.

Asclepias quadrifolia Jacq.—Woods; infrequent. H, LE, WAP, VB.

Asclepias sullivantii Engelm.—Rare. MU: low prairies, Reppert, 1896. VB: roadside prairie remnant along Ia. Hwy. 16, app. 5½ mi. W of Hillsboro, *3365*.

Asclepias syriaca L.—Weed of open ground; common.

Asclepias tuberosa L.—Prairie remnants and roadsides; frequent.

Asclepias verticillata L.—Prairie remnants, roadsides, railways, open sandy places; common.

Asclepias viridiflora Raf. (*Acerates viridiflora* (Raf.) Eaton).—Rare.

LO: sandy roadside, SE¼ 4-75-2, *869*. MU: sandy alluvial flat E of Adams, Shimek, 1910.

Cynanchum laeve (Michx.) Pers. (*Ampelamus albidus* (Nutt.) Britt.; *Gonolobus laevis* of authors, not Michx.).—Rare. LE: Keokuk, Shimek, 1895. LO: wooded banks etc., bottomlands E of Grandview, Muscatine Isl., Shimek & Myers, 1897.

Convolvulaceae (Morning-glory Family)

Breweria pickeringii (Torr.) Gray.—Rare. MU: sandy soil along Ry., Fruitland, Reppert ?, 1892.

**Convolvulus arvensis* L.—Rare. H: J. Mills. MU: bank along Ry,. Muscatine, Reppert, 1896.

Convolvulus sepium L. (inc. *C. fraterniflorus* Mackenz. & Bush).—Weed of roadsides, railways, fence-rows, thickets, woodland borders, etc.; common.

Cuscuta cephalanthi Engelm. (*C. tenuiflora* Engelm.).—Specimens collected from low ground; infrequent. H, LE, LO, MU.

Cuscuta coryli Engelm. (*C. inflexa* Engelm.).—Rare. H: J. Mills. MU: Lake Twp., Reppert ?, 1892.

Cuscuta cuspidata Engelm.—Rare. MU: Muscatine Isl., near Fruitland, Reppert, 1894, 1895, 1896. The 1894 specimen is not typical.

Cuscuta glomerata Choisy.—Rare. MU: F. Reppert, 1894.

Cuscuta gronovii Willd.—Wet places; infrequent. DM, MU, VB, WAP.

Cuscuta pentagona Engelm. (*C. arvensis* Beyrich).—Rare. LE: Montrose, Pammel & Edwards, 1925 (ISC). MA: Oskaloosa, Pammel, 1927 (ISC).

Cuscuta polygonorum Engelm. (*C. chlorocarpa* Engelm.).—Rare. H: J. Mills. MU: above Muscatine along river, Reppert, 1894.

**Ipomoea hederacea* Jacq.—Roadsides and waste places, often in rather moist soil; infrequent. DM, H, LE, LO, WAP.

Ipomoea lacunosa L.—Moist thickets; infrequent. DM, MU.

Ipomoea pandurata (L.) G. F. W. Meyer.—Woods, woodland borders, occasionally in rather open places, usually in moist soil; frequent.

**Ipomoea purpurea* (L.) Roth.—Escaped to roadsides and waste places; infrequent. DM, H, K, LE, LO. Forms with 3-lobed and non-lobed leaves have been observed growing side by side.

Polemoniaceae (Phlox Family)

**Collomia linearis* Nutt.—Rare. A: dry, disturbed remnant prairie, SE¼ 16-70-17, *2635*. MU: sandy prairie along Ry., Wilton to Moscow, Shimek, 1917.

Phlox bifida Beck.—Rare. MU: sandy bottomland woods N of Ry., W of Moscow, Shimek, 1930.

Phlox divaricata L.—Moist woods and borders; common.

**Phlox paniculata* L.—Escaped cultigen; rare. MU: moist roadside, app. 3 mi. N of Wildcat Den St. Pk., *4317*.

Phlox pilosa L.—Prairie remnants and sandy, open places; infrequent. LE, LO, MU.

Polemonium reptans L.—Woods; common.

Hydrophyllaceae (Waterleaf Family)

Ellisia nyctelea L.—Moist, shady ground, waste places; common.

Hydrophyllum appendiculatum Michx.—Moist woods; infrequent. H, LE, MU.

Hydrophyllum virginianum L.—Moist woods; frequent.

Boraginaceae (Borage Family)

**Cynoglossum officinale* L.—Waste places; infrequent. DM, H, LE.

Hackelia virginiana (L.) I. M. Johnston (*Echinospermum virginicum* (L.) Lehm.; *Lappula virginiana* (L.) Greene).—Woods; infrequent. H, LO, MO.

**Lappula myosotis* Moench (*L. echinata* Gilib.; *Echinospermum lappula* (L.) Lehm.).—Waste places; infrequent. H, LE, VB.

**Lithospermum arvense* L.—Rare. MU: sandy soil along Ry., Fairport, Reppert ?, 1892.

Lithospermum canescens (Michx.) Lehm.—Prairie remnants and openings, sandy open places; frequent.

Lithospermum caroliniense (J. F. Gmel.) MacM. (inc. *L. croceum* Fern.; *L. gmelini* of authors, not Michx.).—Dry, sandy soil; infrequent, but often locally abundant. LE, LO, MU.

Lithospermum incisum Lehm. (*L. angustifolium* Michx.)—Rare. MU: sandy flat on E bank of Cedar River near Saulsbury Bridge, Lake Twp., Thorne, 1952.

Lithospermum latifolium Michx.—Rare. H: J. Mills.

Mertensia virginica (L.) Pers.—Rich woods; frequent.

Myosotis verna Nutt. (*M. virginica* (L.) BSP.).—Dry sandy flats and woodland openings; infrequent. A, MU, VB, WAP.

Onosmodium hispidissimum Mackenz.—Rare. LO: low area near west end of Keevers Lake, SE¼ 12-73-2, *207*.

Onosmodium occidentale Mackenz. (*O. molle* var. *occidentale* (Mackenz.) I. M. Johnston).—Rare. MU: old sand-dune N of Bayfield, 8 mi. NW of Muscatine, Shimek, 1908.

VERBENACEAE (Vervain Family)

Lippia lanceolata Michx. (*Phyla lanceolata* (Michx.) Greene).—Wet margins of streams, ponds, lakes, and ditches; common.

Verbena bracteata Lag. & Rodr. (*V. bracteosa* Michx.).—Weed of roadsides, railways, pastures, barnyards, and other open places; common.

Verbena hastata L.—Usually in wet to moist open places, occasionally in upland woods and openings; common. Plants of dry soil, not recognizable as hybrids, differ considerably from those found in moist situations, those from dry places being smaller with less incised leaves and more sparingly branched inflorescences. The following putative hybrids are noted:

Verbena hastata × *stricta* (= *Verbena* × *rydbergii* Moldenke).—LO: Dewey's Swamp, SW of Cone, Shimek, 1927. MU: sandy slopes above bog, NW of Bayfield, Shimek, 1922.

Verbena hastata × *urticifolia* (= *Verbena* × *engelmannii* Moldenke).— LO: roadside thicket, NE¼ 23-75-3, 96. VB: along road #3 E of Farmington, Shimek, 1931.

Verbena simplex Lehm. (*V. angustifolia* of authors, not Mill.).—Dry sandy soil; infrequent. LO, MU. The following putative hybrid is noted:

Verbena simplex × *stricta* (= *Verbena* × *moenchina* Moldenke).—Dry sandy soil; infrequent. LO, MU.

Verbena stricta Vent.—Weed of roadsides, railways, pastures, and other open, often sandy, places; common. See putative hybrids cited under *Verbena hastata* and *V. simplex*.

Verbena urticifolia L.—Usually in alluvial thickets and open places; frequent. See putative hybrid cited under *V. hastata*.

LABIATAE (Mint Family)

Agastache nepetoides (L.) Kuntze.—Woods; infrequent. DM, H, MA, MU.

Agastache scrophulariaefolia (Willd.) Kuntze.—Woods, and thickets, usually in sandy soil; infrequent. H, MU.

Blephilia ciliata (L.) Benth.—Woods; frequent.

Blephilia hirsuta (Pursh) Benth.—Woods, infrequent. H, LO, MA, MU.

**Glecoma hederaca* L. (*Nepeta hederacea* (L.) Trev.).—Disturbed alluvium, neglected lawns, and waste places; frequent.

Hedeoma hispida Pursh.—Dry sandy, usually wooded, places; frequent.

Hedeoma pulegioides (L.) Pers.—Usually in dry open woods, and woodland openings, occasionally in low woods; common.

**Lamium amplexicaule* L.—Rare, or overlooked because of the superficial resemblance of this species to *Glecoma hederacea*. LE: Keokuk, Bell, 1924 (ISC); J. Fults, 1932 (ISC).

**Leonurus cardiaca* L.—Roadsides, disturbed woods, waste places; frequent.

Lycopus americanus Muhl. (*L. sinuatus* Ell.).—Sloughs, marshes, and wet margins; common.

Lycopus uniflorus Michx.—Rare. MU: low ground NW of Bayfield, Shimek, 1915; border of pond among old dunes, 8 mi. NW of Muscatine, Shimek, 1926.

Lycopus virginicus L.—Wet margins; infrequent. H, LO, MU, VB.

**Marrubium vulgare* L.—Rare. MU: waste places, Reppert, 1892.

Mentha arvensis L. (inc. *M. canadensis* L.).—Wet ground; frequent.

**Mentha cardiaca* Gerarde.—Rare. J: ditch along road near park, SE¼ 24, Center Twp., Gilly, 1934 (ISC).

**Mentha gentilis* L.—Rare. LE: Montrose, Pammel, 1929 (ISC).

**Mentha spicata* L.—Moist places; infrequent. H, LO, MA.

**Monarda didyma* L.—Rarely escaped cultigen. LE: on Hwy., Keokuk to Ft. Madison, 1924 (ISC).

Monarda fistulosa L. (inc. *M. mollis* L.).—Prairie remnants and openings, roadsides, and railways, occasionally in open woods; common.

Monarda punctata L.—Dry, sandy open places; infrequent, but often locally abundant. DM, LE, LO, MU.

**Nepeta cataria* L.—Roadsides, thickets, barnyards, fence-rows, disturbed woodland, and waste ground; frequent.

**Perilla frutescens* (L.) Britt.—Rare. DA: edge of woods along terrace above Des Moines River, 7 mi. E of Floris, Hayden, 1940 (ISC).

Physostegia[18] *parviflora* Nutt.—Moist places; infrequent. LO, MU.

Physostegia virginiana (L.) Benth. (inc. *P. speciosa* Sweet; apparently inc. *Dracocephalum formosius* (Lunell) Rydb., in part; *D. virginianum* L.).—Specimens collected from meadow and dry sandy banks along Ry.; infrequent. LO, MU.

Prunella vulgaris L.—Prairie remnants and openings, roadsides, woods, thickets; common.

Pycnanthemum pilosum Nutt. (*P. muticum* var. *pilosum* Higley & Raddin).—Dry open woods, and sandy open soil; frequent.

Pycnanthemum tenuifolium Schrad. (*P. flexuosum* of authors, not (Walt.) BSP.; *P. linifolium* (Willd.) Pursh; *Koellia flexuosa* (Walt.) MacM.).—Prairie remnants and openings; common.

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[18]Treatments of *Physostegia* are quite contradictory; the one followed is generally that of Fernald, 1950.

Pycnanthemum virginianum (L.) Durand & Jackson (*P. lanceolatum* Pursh).—Mostly in moist, usually open, ground; infrequent. K, MU, VB. An atypical specimen (Reppert, MU, 1898) may exemplify Gleason's (1952) statement that certain plants, ". . . may be suspected to be hybrids between this species and *P. flexuosum*."

**Salvia pitcheri* Torr.—Probably adventive from more southerly areas; rare. MU: along Ry., Muscatine, Reppert, 1896.

**Salvia reflexa* Hornem. (*S. lanceaefolia* Poir.; *S. lanceolata* Willd.).—Probably adventive from more northerly or westerly areas; rare. MU: F. Reppert, 1890.

Scutellaria galericulata L. (inc. *S. epilobiifolia* A. Hamilton).—Rare. MU: wet grounds near Cedar River, Reppert, 1894.

Scutellaria incana Biehler (*S. canescens* Nutt.).—Rare. LO: along Ry. in damp places, Columbus Junction, Reppert, 1892.

Scutellaria lateriflora L.—Marshy ground, moist margins, and moist open alluvial woods; common.

Scutellaria nervosa Pursh.—Rare. J: wooded slopes S of Cedar Creek, S of Fairfield, Shimek, 1930 (ISC).

Scutellaria ovata Hill (inc. *S. cordifolia* Muhl., and *S. versicolor* Nutt.).—Woods; frequent.

Scutellaria parvula Michx. (inc. *S. leonardii* Epl.). Although certain plants can be distinguished as either *S. parvula* or *S. leonardii* many specimens evidence gross lack of character correlations. Until this complex, as it occurs in Iowa, is better understood, the above synonomy seems indicated.

Stachys palustris L. (inc. *S. arenicola* Britt.).—Marshes and wet margins; frequent.

Stachys tenuifolia Willd. (*S. ambigua* of authors, not (Gray) Britt.; *S. aspera* of some authors, not Michx.; inc. *S. hispida* Pursh).—Marshes, moist thickets, and wet margins; common.

Teucrium canadense L. (inc. *T. occidentale* Gray).—Open woods, thickets, prairie remnants, sandy ground, and waste places, usually in moist soil; common.

Trichostema brachiatum L. (*Isanthus brachiatus* (L.) BSP.; *I. caeruleus* Michx.).—Specimens collected from meadow, sand-hills, and rocky open soil; infrequent. H, LO, MU, VB.

Solanaceae (Nightshade Family)

**Datura stramonium* L. (*D. tatula* L.).—Farmyards, and waste places; frequent.

**Lycium halimifolium* Mill.—Rarely escaped cultigen. DM: open places, Burlington, Shimek, 1900. Specimens from H, K, and LE counties are extant but probably were taken from cultivated plants.

**Nicandra physalodes* (L.) Gaertn.—Rare. MU: border of a cornfield, Reppert, 1896.

Physalis heterophylla Nees.—Prairie remnants, roadsides, old pastures, and sandy open places; common.

Physalis longifolia Nutt. (inc. *P. subglabrata* Mackenz. & Bush).—Open to shady, usually moist, places; infrequent. LE, LO, MA, VB.

Physalis pubescens L.—Rare. VB: near Birmingham, Engel, 1925 (PC).

Physalis virginiana Mill. (*P. lanceolata* of authors, not Michx.).—Prairie remnants, railroad ballast and dry sandy open places; frequent. One specimen examined (Gilly, J, 1933, PC) seems to have in combination the foliage of *P. virginiana* and the pubescence of *P. lanceolata.*

**Solanum carolinense* L.—Weed of farmyards, roadsides, railways, sandy open ground, and waste places; common.

**Solanum dulcamara* L.—Thickets of moist places; frequent.

**Solanum nigrum* L.—Barnyards, moist thickets, railways, roadsides, disturbed woods, and waste places; common.

**Solanum rostratum* Dunal.—Waste places, especially in neglected farmyards; frequent.

**Solanum sisymbriifolium* Lam.—Rare adventive. J: Fairfield, Deal, 1920 (ISC).

Scrophulariaceae (Figwort Family)

Bacopa rotundifolia (Michx.) Wettst.—Shallow, still water; infrequent. A, DA, LE, LO, MU.

Castilleja coccinea (L.) Spreng.—Specimens collected from moist grassy hill, upland openings, and sandy flats; infrequent. MU.

**Chaenorrhinum minus* (L.) Lange (*Linaria minor* (L.) Desf.).—Roadsides and railways; infrequent. LE, VB.

Chelone glabra L.—Rare. MU: boggy places in sandy woods NE of pond 8 mi. NW of Muscatine, Shimek, 1927; bog on road to Wildcat Den, Guldner, 1953.

Chelone obliqua L.—Rare. DM: Skunk River Valley, Bartsch, 1895. MU: thickets along upper end of Muscatine Slough, Reppert, 1894.

Collinsia verna Nutt.—This species should be sought in rich woods; rare. J: T. & M. Fitzpatrick, 1896 (ISC). WASH: 3 mi. S of Crawfordsville, Wagenknecht, 1953.

Conobea multifida (Michx.) Benth. (*Leucospora multifida* (Michx.) Nutt.).—Rare. LO: open sandy alluvial flat, Muscatine Isl., Myers, 1897. MU: shores along Mississippi, Wyoming Hills, Reppert, 1894.

Dasistoma macrophylla (Nutt.) Raf. (*Seymeria macrophylla* Nutt.).—Dry open woods, and openings; infrequent. H, MA, MU, VB.

Gerardia aspera Dougl.—Rare. MU: prairie along Ry., S of Wilton, Shimek, 1922.

Gerardia auriculata Michx. (*Otophylla auriculata* (Michx.) Small; *Tomanthera auriculata* (Michx.) Raf.).—Moist depressions in prairie remnants; infrequent. H, K, LO, MO, MU.

Gerardia gattingeri Small.—Rare. H: J. Mills.

Gerardia grandiflora Benth. var. *pulchra* Pennell (*Aureolaria grandiflora* (Benth.) Pennell).—Dry open woods, often on crests and ridges and in rocky or sandy soil; infrequent. H, LO, MU, VB.

Gerardia purpurea L. (inc. *G. paupercula* (Gray) Britt.; *Agalinis purpurea* (L.) Britt.).—Rare. DM: moist, sandy flat near Spring Grove, *1666*. MU: desiccated sedge meadow in fixed dunes, NW¼ 7, Lake Twp., Thorne, 1952.

Gerardia skinneriana Wood.—Rare. MU: prairie along Ry., S of Wilton, Shimek, 1922.

Gerardia tenuifolia Vahl (*Agalinis tenuifolia* (Vahl) Raf.).—Moist margins and marshy ground, and wooded slopes and bluffs; common.

Gratiola neglecta Torr.—Wet margins, marshy places, and seepage slopes; infrequent. H, LO, MU.

Gratiola virginiana L.—Rare. LE: small pond, app. 1½ mi. WSW of Ft. Madison, 14-67-5, *1532*. MU: muddy margins, and shallow water of small ponds among fixed dunes, NW¼ 7, Lake Twp., Thorne, 1952.

Linaria canadensis (L.) Dumont.—Dry, open, sandy soil; rare, but locally abundant. LO: extremely sandy soil near Moose Lodge, Muscatine Isl., NE¼ 4-75-2, *4121*. MU: sandy soil near Fruitland, *2132*.

**Linaria vulgaris* Hill.—Roadsides and railways; frequent.

Lindernia dubia (L.) Pennell (inc. *L. anagallidea* (Michx.) Pennell). The differences reported between these taxa seem too obscure to warrant their separation.—Moist ground, especially margins of ponds, sloughs, and streams; common.

Mimulus alatus Ait.—Alluvial wet places; infrequent. LE, VB, WASH.

Mimulus glabratus HBK. var. *fremontii* (Benth.) Grant.—Rare. DM: Burlington, Bartsch, 1895.

Mimulus ringens L.—Marshy ground and moist margins; common.

Pedicularis canadensis L.—Dry to moist, usually wooded, ground; infrequent. A, K, MU, VB.

Pedicularis lanceolata Michx.—Rare. MU: swampy places, Lake Twp., Reppert, 1892; marsh at base of bluff along Hwy. 6, 2 mi. E of Atalissa, Thorne *et al.,* 1952.

Penstemon digitalis Nutt.—Prairie remnants, and sandy open places; frequent.

Penstemon grandiflorus Nutt.—Infrequent in sandy soil of Muscatine Isl. area, perhaps absent elsewhere. LO, MU.

Penstemon pallidus Small (*P. gracilis* of authors, not Britt.).—Prairie remnants and openings, dry open woods, nearly always in sandy soil; frequent.

Penstemon tubaeflorus Nutt.—Rare. J: Koontz pasture, NE¼ 21, Center Twp., Monatrey, 1932 (PC). Most reports of this species are based upon misidentifications of *P. digitalis.*

Scrophularia lanceolata Pursh (*S. leporella* Bickn.).—Sandy open or sparsely wooded soil; infrequent. DM, LE, LO, MU.

Scrophularia marilandica L.—Open woods; common.

**Verbascum blattaria* L.—Roadsides, pastures, and waste places; infrequent. DM, LE, MU, VB.

**Verbascum phlomoides* L.—Rare. LE: Ry. E of Farmington, Shimek, 1923. LO: sandy, disturbed, prairie-like area ½ mi. S of Fredonia, *2647.*

**Verbascum thapsus* L.—Roadsides, pastures, sandy open soil, and waste places; common.

Veronica americana (Raf.) Schw.—Rare. LE: Keokuk, Hitchcock (ISC).

**Veronica arvensis* L.—Disturbed woods, pastures, grassy areas, and waste places; frequent.

Veronica peregrina L.—Roadsides, moist margins, gardens, woods, and waste places; common.

**Veronica persica* Poir. (*V. tournefortii* of some authors, not Gmel.).—Rare. VB: weed in lawn of Newbold farm, app. 1 mi. W of Hillsboro, *1890, 4170.*

Veronicastrum virginicum (L.) Farw. (*Veronica virginica* L.).—Depressions along roads and railways, thickets, prairie remnants and openings, woods; common.

Wulfenia bullii (Eat.) Barnh. (*Synthyris bullii* (Eat.) Heller).—Rare. MU: sandy soil in open woods near Cedar River, Reppert, 1894; sandy slope NW of Bayfield, Shimek, 1920.

Bignoniaceae (Bignonia Family)

Campsis radicans (L.) Seeman (*Tecoma radicans* (L.) Juss.).—Sparsely wooded bluffs, fence-rows, and thickets—probably indigenous in only the extreme southeastern part of the area; frequent.

Catalpa speciosa Warder.—Considered by Fernald (1950) to be indigenous in southeastern Iowa; rare. LO: low, rather open ground near Lake Odessa, SW¼ 17-74-2, *690;* meadow at margin of marsh, NW¼ 13-76-5, *3510*.

Martyniaceae (Martynia Family)

**Proboscidea louisianica* (Mill.) Thell. (*Martynia louisianica* Mill.; *M. proboscidea* Glox.).—Rare. K: Keswick, Cameron, 1897. One specimen examined (banks of the Cedar River, Macbride, 1884) may have been collected from Muscatine Co.

Orobanchaceae (Broom-rape Family)

Orobanche uniflora L. (*Aphyllon uniflorum* (L.) Torr. & Gray).—Rare. MU: F. Reppert, 1878. VB: rich woods along small creek, 1 mi. E of Bonaparte, Thorne, 1951.

Lentibulariaceae (Bladderwort Family)

Utricularia gibba L.—Rare. MU: F. Reppert, 1878 (ISC).

Utricularia vulgaris L. (*U. macrorhiza* Le Conte).—Quiet water; infrequent. LO, MU.

Acanthaceae (Acanthus Family)

Justicia americana (L.) Vahl (*Dianthera americana* L.).—Rare. J: J. Mills.

Ruellia humilis Nutt. (*R. caroliniensis* of some authors, not (Walt.) Steud.; *R. ciliosa* of authors, not Pursh).—Prairie remnants and openings, roadsides, and dry open woods; common.

Ruellia strepens L.—Moist wooded areas; infrequent. A, DM, H, VB.

Phrymaceae (Lopseed Family)

Phryma leptostachya L.—Woods; common.

Plantaginaceae (Plantain Family)

Plantago aristida Michx. (*P. patagonica* var. *aristata* (Michx.) A. Gray).—Railroad ballast, and dry sandy soil, especially along roads; common.

**Plantago indica* L. (*P. arenaria* W. & K.).—Rare. J: Ry. switchyards, Fairfield, Gilly & McDonald, 1933 (ISC).

**Plantago lanceolata* L.—Weed of roadsides, railways, fields, neglected lawns, waste places; common.

**Plantago major* L.—Rare or overlooked. MU: door-yards, etc., Reppert, 1894.

Plantago purshii R. & S.—Dry sandy soil; infrequent. LE, LO, MU.

Plantago rugelii Decne.—Weed of nearly all but aquatic habitats; very common.

Plantago virginica L.—Dry, usually sandy, open places or sparsely wooded areas; frequent.

Rubiaceae (Madder Family)

Cephalanthus occidentalis L.—Marshy ground, and wet margins; common.

**Diodia teres* Walt.—Probably adventive from more southerly areas; rare. LE: sandy soil along Ry. WSW of Ft. Madison, SE¼ 12-67-5, *1844*.

Galium aparine L.—Moist woods, ditches, and thickets; common.

Galium circaezans Michx.—Woods; common.

Galium concinnum T. & G.—Rich, to rather dry, wooded slopes and bluffs; common.

Galium obtusum Bigel. (*G. tinctorium* of some Iowa authors, not L.; *G. trifidum* var. *latifolium* Torr.).—Open alluvial woods; moist prairie depressions, and marshy places; frequent, sometimes forming dense beds.

Galium tinctorium L. (*G. claytonii* Michx.).—Marshy ground; infrequent. DM, LE, LO.

Galium triflorum Michx.—Moist woods; common.

Houstonia minima Beck.—Rare. MU: sandy open places, Bayfield, Shimek, 1903; old dune at pond 8 mi. NW of Muscatine, Shimek, 1925.

Caprifoliaceae (Honeysuckle Family)

Diervilla lonicera Mill.—Rare. MA: open woods, "The Bluffs," along Des Moines River, SW of Oskaloosa, Shimek, 1921. MU: rich wooded slope, Wildcat Den St. Pk., *4313*.

Lonicera dioica L .(*L. glauca* Hill; inc. *L. glaucescens* Rydb.).—Rare. A: upland woods, Unionville, Shimek, 1904.

Lonicera prolifera (Kirchner) Rehder.—Wooded bluffs and slopes, thickets, often in calcareous soil; frequent.

**Lonicera tatarica* L.—Rarely escaped cultigen. DM: sandy soil of wooded grove, near Spring Grove, *411*.

Sambucus canadensis L.—Low woods, thickets, fence-rows, and moist margins; common.

**Symphoricarpos albus* (L.) Blake (*S. racemosus* of some authors, not Michx.; inc. *S. rivularis* Suksd.).—Rarely escaped cultigen. MU: roadside near farm, Reppert, 1891.

**Symphoricarpos occidentalis* Hook.—Rare adventive. MU: along Ry. above Muscatine, Reppert, 1897.

Symphoricarpos orbiculatus Moench (*S. vulgaris* Michx.).—Brushy pastures, cut-over areas, upland woods and borders, exposed bluffs, thickets, neglected ground along streams; common.

Triosteum aurantiacum Bickn. Possibly not specifically distinct from the following species.—Upland woods; infrequent. A, LE, MU.

Triosteum perfoliatum L.—Woods, and openings; frequent.

Viburnum[10] *lentago* L.—Woods; infrequent. DM, J, K, LE, LO, MU.

Viburnum molle Michx.—Rare. H: rocky wooded bluffs along Skunk River, Oakland Mills St. Pk., *1352, 1605, 2042*. VB: rocky ledges app. 1 mi. E of Bonaparte, 68-8, *3907*.

**Viburnum opulus* L. (inc. *V. trilobum* Marsh).—Apparently escaped; rare. H: in woods and along streams, Mt. Pleasant, Oster, 1933 (IWC). Despite the information given on the label, this specimen may well have been taken from cultivation. Consequently, the report of this species as an escape in SE Iowa may be in error.

Viburnum rafinesquianum Schultes (inc. *V. affine* Bush; *V. pubescens* of authors, not (Ait.) Pursh; *V. molle* of some Iowa authors, not Michx.).—Woods and thickets, usually in calcareous soil; frequent.

Valerianaceae (Valerian Family)

**Valeriana officinalis* L.—Evidently rarely escaped from gardens. H: roadsides and thickets, Mt. Pleasant, Hultquist, 1926 (IWC). The notes under *Viburnum opulus* also are applicable here.

Cucurbitaceae (Gourd Family)

**Cucurbita foetidissima* HBK.—Probably adventive from more southerly areas; rare. LE: dry railway cut through upland woods, SE¼ 13-66-7, *2216*. MU: F. Reppert.

**Cucurbita maxima* Duchesne.—Rare. LE: spontaneous in moist thicket near Mississippi, SW¼ 27-68-3, *3552*.

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[10]In addition to the species listed, *Viburnum lantana* L. has been collected on a prairie ridge in Lake Keomah St. Pk., (Davidson, MA, *506*); whether the plant had been cultivated or had escaped is not known.

Echinocystis lobata (Michx.) T. & G. (*Micrampelis lobata* (Michx.) Greene).—Apparently rare. MU: damp soil along the Mississippi, Reppert, 1891.

Sicyos angulatus L.—Moist alluvium, and slopes along streams; frequent.

CAMPANULACEAE (Bluebell Family)

Campanula americana L.—Moist woods, and thickets; common.

Campanula aparinoides L.—Rare. LO: Dewey's Swamp, SW of Cone, Shimek, 1927. MU: Cedar River region, Reppert, 1878; boggy places, W of Bayfield, Shimek, 1907.

**Campanula rapunculoides* L.—Rarely escaped cultigen. A: roadside, NE¼ 24-70-17, *2624*.

Lobelia cardinalis L.—Wet, usually shady ground; frequent in the counties mentioned, not observed elsewhere. DM, LO, MU.

Lobelia inflata L.—Open woods, fields, thickets, moist banks, and waste places; frequent.

Lobelia siphilitica L.—Wet ground; frequent.

Lobelia spicata Lam.—Prairie remnants and openings; infrequent. H, LO, MU, WASH.

Triodanis perfoliata (L.) Nieuwl. (*Specularia perfoliata* (L.) A. DC.).—Prairie remnants and openings, sandy open places, and open upland woods; common.

COMPOSITAE (Composite Family)

Achillea millefolium L. (inc. *A. lanulosa* Nutt.).—Roadsides, railways, prairie remnants and openings, open woods, pastures, fields, and other dry open places; common.

Ambrosia artemisiifolia L. (*A. elatior* L.).—Roadsides, railways, pastures, fields, and disturbed places in general; common.

Ambrosia bidentata Michx.—Rare. MO: Iowa Pasture Research Farm near Albia, Huges, 1949 (ISC).

Ambrosia psilostachya DC. (*A. coronopifolia* T. & G.).—Dry sandy soil; infrequent. LE, LO, MU.

Ambrosia trifida L.—Roadsides, railways, fence-rows, and other disturbed open or sparsely wooded ground; common.

Antennaria neglecta Greene (inc. *A. neodioica* Greene).—Pastures, prairie remnants and openings, dry open woods, often in rather sandy soil; common.

Antennaria plantaginifolia (L.) Richards. (inc. *A. fallax* Greene, and *A. parlinii* Fern.).—Prairie openings, dry open woods and borders; common.

**Anthemis cotula* L.—Weed of roadsides, railways, pastures, barnyards, fields, and waste places; common.

**Arctium minus* (Hill) Bernh.—Waste places; frequent.

**Artemisia abrotanum* L.—Rare. MU: in old gardens and about dwellings, Reppert, 1892.

**Artemisia annua* L.—Rare. MU: Muscatine, Reppert, 1890; sandy road SW of Muscatine, Shimek, 1910.

**Artemisia biennis* Willd.—Rare. LO: moist waste area near Lake Odessa, SW¼ 17-74-2, *689*. MU: waste ground, Reppert, 1891.

Artemisia caudata Michx.—Dry sandy soil; frequent.

Artemisia dracunculus L. (*A. dracunculoides* Pursh; *A. glauca* Pall., in part).—Rare. LO: sandy plain near Fruitland, Shimek, 1909. MU: dry soils, banks and hillsides, Reppert, 1894.

Artemisia ludoviciana Nutt. (*A. serrata* of Iowa authors, not Nutt.; *A. vulgaris* L. var. *ludoviciana* (Nutt.) Ktze.).—Prairie remnants, usually in sandy soil; frequent.

Aster azureus Lindl.—Prairie remnants and openings; frequent.

Aster cordifolius L.—Woods; frequent. The following putative hybrid is noted (see also *A. drummondii*):

Aster cordifolius × *sagittifolius*.—Woods and borders; infrequent. DA, H, VB.

Aster drummondii Lindl.—Woods; frequent. An atypical specimen examined (Davidson, H, *1378*) may represent a hybrid with *A. cordifolius*.

Aster ericoides L. (*A. multiflorus* Ait.).—Prairie remnants and openings, roadsides, and railways; common. See *A. oblongifolius*.

Aster furcatus Burgess (*A. macrophyllus* of Iowa authors, not L.).—Rare. MU: upland woods, Wildcat Den, Shimek, 1926; wooded slope of fixed dune, NW¼ 7, Lake Twp., Thorne, 1952. The following putative hydrid is noted:

Aster furcatus × *umbellatus*.—MU: sandy wooded slope on dune NE of pond 8 mi. NW of Muscatine, Shimek, 1927. The apparent hybridity of this specimen was first observed by Dr. L. F. Guldner.

Aster laevis L.—Prairie remnants and openings; common.

Aster lateriflorus (L.) Britt.—Woods, prairie openings, and old pastures; common. One specimen examined (Reppert, MU, 1894) is atypical and may be of hybrid origin.

Aster linariifolius L.—Rare. MU: sandy open woods, Cedar Twp., Reppert, 1896.

Aster lucidulus (Gray) Wieg. (*A. puniceus* L., in part).—Marshy ground; frequent.

Aster novae-angliae L.—Prairie remnants, roadsides, and railways, usually in moist soil; common. See *A. oblongifolius*.

Aster oblongifolius Nutt.—Dry sandy soil, and open rocky bluffs; infrequent. DM, LE, LO, MU. One specimen examined (Shimek, VB, 1929) has been annotated by Dr. L. H. Shinners, "? *A. o.* var. *angustatus* . . . densely pubescent stem suggests hybridization with *A. novae-angliae* or *A. ericoides* var. *prostratus*."

Aster ontarionis Wieg. (*A. diffusus* Ait. var. *thyrsoideus* Gray; inc. *A. panotrichus* Blake).—Low woods, and wooded bluffs adjacent to streams, also upland woods and prairie openings; frequent.

Aster parviceps (Burgess) Mack. & Bush (*A. dumosus* of Iowa authors, not L.; *A. multiflorus* of some Iowa authors, not Ait.).—Prairie remnants; infrequent. H, MA, MU.

Aster pilosus Willd. (*A. ericoides* of some authors, not L.; *A. tenuifolius* of some authors, not L.).—Open woods and borders, sandy open places, prairie remnants, roadsides, and railways; common.

Aster praealtus Poir. (*A. salicifolius* of authors, not Lam.).—Moist, usually open, soil; frequent.

Aster prenanthoides Muhl.—Rare. LO: Reppert, 1891. MU: along a woodland stream, Wildcat Den, Reppert, 1896.

Aster ptarmicoides (Nees) T. & G.—Rare. MU: dry sandy places on prairie near Bayfield, Lake Twp., Reppert, 1894; old prairie sand-dune at school 7 mi. NW of Muscatine, Shimek, 1927.

Aster sagittifolius Wed.—Upland woods, borders, and openings; common. See *A. cordifolius*.

Aster schreberi Nees (*A. umbelliformis* Burgess).—Rare. MU: woodland about 2 mi. N of Muscatine, Reppert, 1893; moist, wooded north slope of fixed dune, NW¼ 7, Lake Twp., Thorne, 1952.

Aster sericeus Vent.—Prairie remnants, and sandy open ground; infrequent. A, LO, MU.

Aster shortii Lindl.—Woods; infrequent. DM, LE, LO, MU.

Aster simplex Willd. (*A. paniculatus* var. *simplex* (Willd.) Burgess; *A. tradescantii* of authors, not L.; inc. *A. interior* Wieg., and *A. paniculatus* Lam.).—Prairie remnants, open woods, and moist places; common.

Aster turbinellus Lindl.—Rare. LE: open places, edge of woods N of Keokuk, Shimek, 1932; upland woods app. ½ mi. W of Mooar's Station, SW¼ 4-65-5, *1541*.

Aster umbellatus Mill. (inc. *A. pubentior* Cron.).—Rare. LO: damp thickets, Reppert, 1891. MU: boggy marsh at base of sandy bluff, E of Cedar River, SW¼ 15, Lake Twp., Thorne, 1952. See *A. furcatus*.

Aster vimineus Lam.—Moist, sandy, open places; infrequent. LO, MU. The manuals do not include Iowa within the range of this species.

Bidens aristosa (Michx.) Britt.—Rare. J: low ground app. ½ mi. W of Fairfield, *4097*. K: desiccated marshy area along Ia. Hwy. 149, NE¼ 28-77-11, *1271*.

**Bidens bipinnata* L.—Rare. LE: bluff overlooking Mississippi, Rand Park, Keokuk, *3293*. LO: moist, sandy margin of slough, near Moose Lodge, Muscatine Isl., NE¼ 4-75-2, *3935*.

Bidens cernua L.—Marshy ground, and wet margins; common.

Bidens coronata (L.) Britt.—Sloughs, wet margins; infrequent. LE, LO, VB.

Bidens discoidea (T. & G.) Britt.—Rare. LO: Muscatine Isl., Shimek & Myers, 1897.

Bidens frondosa L.—Wet margins and thickets; apparently infrequent. DA, LO, VB.

Bidens polylepis Blake (*B. involucrata* (Nutt.) Britt.).—Mostly in wet depressions and margin, but also occurring quite frequently, sometimes in dense stands, as a weed along apparently dry roadsides and about fields; frequent. An aliguliflorous specimen examined (Davidson, H, *1364*) possessing achenes typical of *B. polylepis* may be of hybrid origin.

Bidens tripartita L. (inc. *B. comosa* (Gray) Wieg., and *B. connata* Muhl.).—Wet depressions and margins; common.

Bidens vulgata Greene.—Wet depressions, margins and thickets; frequent.

Boltonia asteroides (L.) L'Her. (inc. *B. latisquama* Gray).—Marshy depressions, and wet margins; frequent.

Cacalia atriplicifolia L. (*Mesadenia atriplicifolia* (L.) Raf.).—Wooded bluffs and slopes, and moist, often rather sandy, open places; frequent.

Cacalia muhlenbergii (Sch. Bip.) Fern. (*C. reniformis* of authors, not Lam.).—Rare. MU: borders of woods, Reppert, 1893.

Cacalia suaveolens L. (*Synosma suaveolens* (L.) Raf.).—Rare. MU: along or near woodland creek banks, Cedar and Lake townships, Reppert, 1893.

Cacalia tuberosa Nutt.—Meadow, prairie remnants and openings; infrequent. H, J, MU.

**Carduus acanthoides* L.—Rare. VB: Keosauqua, Pammel, 1925 (ISC).

**Carduus nutans* L.—Rare. LO: U.S. Hwy. 61 roadside near Ry. overpass, SE¼ 4-75-3, *2558, 4154*.

**Centaurea maculosa* Lam.—Rare. J: dry bank along creek, SE¼ 30-71-11, McDonald, 1935 (PC).

**Chrysanthemum leucanthemum* L.—Roadsides, railways, and waste places; infrequent. DM, MU.

**Cichorium intybus* L.—Roadsides; common.

Cirsium altissimum (L.) Spreng. (inc. *C. iowense* (Pammel) Fern.). There is some evidence that this species is only questionably distinct from *C. discolor*.—Open woods and thickets; frequent.

**Cirsium arvense* (L.) Scop. (*Cnicus arvensis* Hoffm.).—Obnoxious weed; infrequent. LE, MU.

Cirsium discolor (Muhl.) Spreng.—Open woods, thickets, roadsides, and neglected open places; common. See *C. altissimum*.

Cirsium hillii (Canby) Fern. (*Cnicus hillii* Canby).—Rare. MU: sandy pasture, Cedar River region, Reppert, 1897.

Cirsium undulatum (Nutt.) Spreng.—Rare. LE: 21-76-5, Fults, 1931 (ISC).

**Cirsium vulgare* (Savi) Tenore (*C. lanceolatum* of authors, not Hill; *Carduus lanceolatus* L.; *Cnicus lanceolatus* (L.) Willd.).—Weed of roadsides, railways, pastures, farmyards, and waste places; common.

**Coreopsis lanceolata* L.—Rare. J: roadside, SW¼ 36-72-10, Gilly & McDonald, 1933 (PC). LE: waste area at margin of sandy prairie remnant, along Ia. Hwy. 2 near western limits of Ft. Madison, *468*.

Coreopsis palmata Nutt.—Prairie remnants and roadsides; infrequent. H, LO, MU.

**Coreopsis tinctoria* Nutt.—Rare. MU: near Fruitland, Reppert ?, 1894.

Coreopsis tripteris L.—Open woods, woodland borders, thickets, occasionally in prairie remnants; infrequent. K, LO, MA, MU, VB.

Dyssodia papposa (Vent.) Hitchc. (*D. chrysanthemoides* (Willd.) Lag.).—Open places, usually in dry soil; infrequent. DM, LE, LO, MU, VB.

Echinacea pallida Nutt. (*E. angustifolia* of authors, not DC.; *Brauneria angustifolia* of authors, not (DC.) Heller; *B. pallida* (Nutt.) Britt.).—Prairie remnants; infrequent. H, LO, MU, WAP.

Echinacea purpurea (L.) Moench.—Rare. LO: border of woods, Reppert, 1892; Muscatine Isl., Myers, 1897.

Eclipta alba (L.) Hassk.—Wet margins of ponds, lakes, sloughs, and streams; frequent.

Erechtites hieracifolia (L.) Raf.—Moist depressions, and wet margins; frequent.

Erigeron annuus (L.) Pers.—Open woods, pastures, and roadsides; common.

Erigeron canadensis L. (*Conyza canadensis* (L.) Cron.; *Leptilon canadensis* (L.) Britt.).—Weed of roadsides, railways, pastures, barnyards, fields, neglected lawns, and disturbed ground in general; common.

Erigeron divaricatus Michx. (*Conyza ramosissima* Cron.; *Leptilon divaricatum* (Michx.) Raf.).—Open places; infrequent. H, LO, MU.

Erigeron philadelphicus L.—Woods and thickets; infrequent. H.

Erigeron pulchellus Michx. (*E. bellidifolius* Muhl.).—Rare. MU: open moist woods, Reppert, 1890; Wildcat Den, Reppert, 1891.

Erigeron strigosus Muhl. (*E. ramosus* of authors, not Raf.).—Open woods, prairie remnants, and roadsides; common.

Eupatorium altissimum L.—Prairie remnants and openings, and dry open bluffs; frequent.

Eupatorium maculatum L.—Rare. MU: low ground and hillside bogs, near Cedar River, Reppert, 1894.

Eupatorium perfoliatum L.—Marshy ground, wet margins; infrequent. LE, LO, MU, VB.

Eupatorium purpureum L. (*E. falcatum* Michx.).—Woods, usually in moist soil; frequent.

Eupatorium rugosum Houtt. (*E. ageratoides* L. f.; *E. urticaefolium* Reichard).—Woods and thickets; common.

Eupatorium serotinum Michx.—Moist open or sparsely wooded soil; frequent.

**Galinsoga ciliata* (Raf.) Blake (*G. parviflora* var. *hispida* DC.).—Waste places, especially in urban areas; frequent.

Gnaphalium obtusifolium L. (*G. polycephalum* Michx.).—Fields, pastures, roadsides, sandy open places, open woods; common.

Gnaphalium purpureum L.—Rare. LE:27-67-7, Fults, 1931 (ISC).

**Grindelia squarrosa* (Pursh) Dunal.—Railways and waste places; infrequent. H, MU.

Helenium autumnale L.—Alluvial or other moist ground, especially frequent in low pastures; common.

**Helianthus annuus* L.—Roadsides, railways, thickets, and waste places; frequent. See *H. petiolaris*.

Helianthus decapetalus L.—Rare. MU: F. Reppert. This specimen is atypical and may be of hybrid origin.

Helianthus giganteus L.—Rare. MU: low copses, Reppert, 1891. VB: moist roadside thicket, Lacey-Keosauqua St. Pk., *3576*.

Helianthus grosseserratus Martens.—Moist open ground; frequent. One specimen examined (Mills, H) is apparently of hyrid origin.

Helianthus hirsutus Raf.—Rare. VB: Sec. 8, Van Buren Twp., Gilly, 1935 (ISC).

Helianthus laetiflorus Pers. (inc. *H. rigidus* (Cass.) Desf., and *H. scaberrimus* Ell.).—Prairie remnants; frequent.

**Helianthus mollis* L.—Rare. MU: along Ry., Muscatine, Barnes, 1896.

Helianthus occidentalis Riddell.—Sandy soil; infrequent. LE, LO, MU.

**Helianthus petiolaris* Nutt.—Dry, sandy open soil, especially along roads and other disturbed places; frequent. One specimen examined (Davidson, LO, *3974*) apparently is a hybrid with *H. annuus*.[20]

Helianthus strumosus L. (*H. doronicoides* of some authors, not Lam.; inc. *H. trachelifolius* Mill.).—Open woods, woodland borders, prairie remnants, roadsides, and fence-rows; frequent. Several putative hybrid specimens have been examined (e.g., Davidson, MO, *3819*).

Helianthus tuberosus L. (*H. tomentosus* of authors, not Michx.).—Prairie remnants, roadsides, fence-rows, and neglected open places, usually in moist soil; frequent. Several specimens have been examined (e.g., Reppert, MU, 1895) which apparently are hybrids of this species, *H. decapetalus* or *H. strumosus* perhaps being involved.

Heliopsis helianthoides (L.) Sweet (inc. *H. scabra* Dunal).—Woods, woodland borders, prairie remnants, and roadsides; common.

Hieracium[21] *canadense* Michx.—Rare. MU: hilly open woods, Wildcat Den, Reppert, 1891.

Hieracium longipilum Torr.—Prairie remnants; infrequent. LE, MU, VB.

Hieracium scabrum Michx.—Rare. LE: openly wooded slope, app. ½ mi. W of Mooar's Station, *1723*. MU: wooded slope of fixed dune, NW¼ 7, Lake Twp., Thorne, 1952.

**Inula helenium* L.—Rare. MU: F. Reppert, 1896.

Iva ciliata Willd.—Rare. DM: moist depression in commercial sand and gravel area, near Spring Grove, *3275*.

**Iva xanthifolia* Nutt.—Rare. MU: waste places, Muscatine, Reppert, 1892.

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[20]This interspecific hybrid has been discussed by Heiser, 1947.

[21]One incomplete specimen examined (Fults, VB, 1933, ISC) may represent *Hieracium florentinum* All.

Krigia biflora (Walt.) Blake (*K. amplexicaulis* (Michx.) Nutt.).—Prairie remnants and openings, and open woods; frequent.

Kuhnia eupatorioides L.—Prairie remnants and roadsides, often in sandy soil, also collected on wooded bluff; frequent.

Lactuca canadensis L.—Open woods, woodland borders, thickets, roadsides, railways, fence-rows, and waste places; common.

Lactuca floridana (L.) Gaertn. (inc. *L. villosa* Jacq.).—Woods, usually of the alluvial type, borders, and thickets; common.

Lactuca ludoviciana (Nutt.) DC. (*L. campestris* Greene).—Rare. MA: damp soil, D. Augustine, 1938 (ISC).

**Lactuca scariola* L.—Weed of roadsides, railways, thickets, barnyards, neglected lawns, and waste areas; common.

Liatris aspera Michx. (*L. scariosa* of authors, not (L.) Willd.).—Prairie remnants and openings, sandy open places, and open upland woods; common. Two specimens from Lee Co. (Mitchell, 1918, ISC; J. Fults, 1931, ISC) have been annotated, by L. H. Shinners, *Liatris* × *spheroidea* Michx. This binomial indicates presumed hybrids of *L. aspera*.

Liatris cylindracea Michx.—Rare. MU: dry soil, Wildcat Den, ? Reppert, 1892.

Liatris pycnostachya Michx.—Prairie remnants; infrequent. H, K, LO, MU.

Liatris squarrosa (L.) Michx.—Rare. WAP: dry, sandy prairie-like pockets and dry crests of sandstone bluffs, Cliffland, NW¼ 11-71-13, *285, 4070*.

**Madia sativa* Molina var. *congesta* T. & G.—Rare adventive. MA: near Ry., Oskaloosa, Pammel, 1930 (ISC).

**Matricaria chamomilla* L.—Rare, or overlooked because of close superficial resemblance to *Anthemis cotula*. MU: waste ground, Muscatine, Reppert, 1895.

**Matricaria matricarioides* (Less.) Porter.—Roadsides, farmyards, and waste places; infrequent. H.

Parthenium integrifolium L.—Prairie remnants; infrequent.

Polymnia canadensis L.—Rich alluvial woods and wooded banks; infrequent. MU, VB.

Prenanthes alba L.—Rich woods, frequent.

Prenanthes aspera Michx.—Rare. MU: fence-row thicket in open dry soil, Reppert, 1891.

Prenanthes racemosa Michx.—Rare. MU: Bayfield, Reppert.

**Pyrrhopappus carolinianus* (Walt.) DC.—Probably adventive from

the south of our area; rare. J: weedy meadow, SE¼ 24-72-10, Gilly, 1934 (PC).

**Ratibida columnifera* (Nutt.) Wooton & Standley (*Lepachys columnifera* (Nutt.) Macbr.).—Rare adventive. H: J. Mills.

Ratibida pinnata (Vent.) Barnh. (*Lepachys pinnata* (Vent.) T. & G.).—Prairie remnants and roadsides; common.

Rudbeckia hirta L. (*R. serotina* Nutt.).—Prairie remnants, roadsides, and woodland openings; common.

Rudbeckia laciniata L.—Alluvial woods and thickets; infrequent. LE, MU, VB.

Rudbeckia subtomentosa Pursh.—Rare. MU: Muscatine Isl., Reppert, 1891; Lake Twp., Reppert, 1892.

Rudbeckia triloba L.—Moist woods and thickets along streams; frequent.

Senecio aureus L.—Rare. MU: Wildcat Den, Reppert.

Senecio pauperculus Michx. (*S. balsamitae* Muhl.; inc. *S. plattensis* Nutt.). Examination of a large number of plants has indicated that the qualitative differences thought to distinguish *S. pauperculus* and *S. plattensis* grade almost imperceptably from one extreme to the other. Cronquist (in Gleason, 1952) has said of *Senecio plattensis*, ". . . passes into *S. pauperculus* on one hand and *S. tomentosus* on the other." His reasons for maintaining the specific status of each are not known.—Prairie remnants and openings, roadsides, and dry sandy open places; frequent.

Silphium integrifolium Michx.—Prairie remnants, roadsides, railways, and old pastures; frequent.

Silphium laciniatum L.—Prairie remnants, roadsides, and railways; frequent.

Silphium perfoliatum L.—Moist alluvium, ditches, and margins; common.

Solidago altissima L. (*S. canadensis* of authors, not L.).—Roadsides, railways, disturbed prairie remnants, pastures, and open woods; common. See *S. gigantea*.

Solidago flexicaulis L. (*S. latifolia* L.).—Wooded slopes and bluffs; frequent.

Solidago gigantea Ait. (*S. serotina* of Ait. and other authors, not Retz.; *S. serotina* var. *gigantea* (Ait.) Gray).—Open alluvial woods and thickets, low pastures and other open places; frequent. One specimen examined (Davidson, DM, *1712*) may represent a hybrid between this species and *S. altissima*.

Solidago graminifolia (L.) Salisb. (*S. hirtella* (Greene) Bush; *S. gymnospermoides* of some authors; *S. tenuifolia* of some authors, not Pursh; *Euthamia graminifolia* of some authors, not (L.) Nutt.).—

Prairie remnants, and sandy open places, often in rather moist soil; infrequent. H, K, LE, LO, MU.

Solidago missouriensis Nutt. (inc. *S. glaberrima* Martens).—Prairie remnants, and sandy open places; infrequent. DA, LE, LO, MU.

Solidago nemoralis Ait. (*S. hispida* of some authors, not Muhl.; *S. longipetiolata* Mackenz. & Bush).—Prairie remnants and openings, dry open woods, open sandy soil; common.

Solidago patula Muhl.—Rare. MU: wet woods, slope of fixed dune, NW¼ 7, Lake Twp., Thorne, 1952.

Solidago riddellii Frank (*Oligoneuron riddellii* (Frank) Sm.).—Rare. MU: low prairie, Nichols, Reppert, 1895.

Solidago rigida L. (*Oligoneuron rigidum* (L.) Sm.).—Prairie remnants; infrequent. DA, K, LO, MU.

Solidago speciosa Nutt.—Rare. LO: border of hilly woods, Reppert, 1891. MU: borders of woods, Reppert, 1891.

Solidago ulmifolia Muhl.—Woods and thickets; common.

**Sonchus arvensis* L. (inc. *S. uliginosus* Bieb.).—Apparently rare. A: roadside about 2 mi. W of Moravia, Hayden, 1939 (ISC). J: roadside about 2 mi. S of Fairfield, Hayden, 1940 (ISC).

**Sonchus asper* (L.) Hill.—Waste places; infrequent. H, LE, MU.

**Sonchus oleraceus* L.—Roadsides and waste places; infrequent. J, LE, MU.

**Tanacetum vulgare* L.—Rare. LE: Skunk River Valley, Bartsch, 1895.

**Taraxacum erythrospermum* Andrz. (*T. laevigatum* of authors, not (Willd.) DC.).—Lawns and other grassy places; frequent.

**Taraxacum officinale* Weber (*T. dens-leonis* Desf.; *Leontodon taraxacum* L.).—Weed of lawns, gardens, fields, farmyards, roadsides, railways, waste places, etc.; very common.

**Tragopogon dubius* Scop. (*T. major* Jacq.).—Weed usually found along roads and railways; common.

**Tragopogon porrifolius* L.—Rare. MA: Augustine farm, 2½ mi. S of Rose Hill, Augustine (ISC).

**Tragopogon pratensis* L.—Weed of roadsides and railways; frequent.

Verbesina alternifolia (L.) Britt. (*Actinomeris alternifolia* (L.) DC.).—Woods near streams; frequent.

Vernonia[22] *baldwinii* Torr. (inc. *V. interior* Sm.).—Prairie remnants and open woods; infrequent. J, LE, VB, WAP.

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[22]Specimens representing the hybrid population known as *Vernonia illinoensis* G1. (see Gleason, 1952, 3: 500) have been collected from nine of the fourteen southeastern Iowa counties.

Vernonia fasciculata Michx.—Low pastures and other open places, moist margins of ditches and sloughs; frequent.

Vernonia missurica Raf.—Prairie remnants and openings, woodland borders, neglected pastures; frequent.

Xanthium strumarium L. (inc. *X. chasei* Fern., *S. chinense* Mill., *X. commune* Britt.).—Roadsides, disturbed wooded ground, pastures, fields, fence-rows, barnyards, and waste places, often in moist soil; common.

Statistical Summary

A. Components of the vascular flora of southeastern Iowa:

	Species		*Genera*
	Native	Introduced	
"Pteridophytes"	36	0	20
Conifers	3	0	3
Monocotyledons	279	47	111
Dicotyledons	687	200	373
Total	1005	247	507

B. Total number of families represented: 124.

C. Number of species included in the largest families:

Compositae	165	Scrophulariaceae	40
Graminae	134	Cruciferae	37
Cyperaceae	87	Ranunculaceae	31
Leguminosae	60	Polygonaceae	27
Rosaceae	44	Umbelliferae	23
Labiatae	40	Caryophyllaceae	19

D. Number of species included in the largest genera:

Carex	57	Salix	12
Aster	25	Chenopodium	11
Polygonum	17	Helianthus	11
Viola	16	Potamogeton	11
Euphorbia	13	Solidago	11
Panicum	13	Cyperus	10
Asclepias	12	Juncus	10

LIST OF EXCLUDED SPECIES

The following species have been reported from southeastern Iowa by previous workers.[23] Voucher specimens to substantiate southeastern Iowa reports have been deposited mostly in one or more of the following herbaria: State University of Iowa, Iowa State College, Parsons College, and Iowa Wesleyan College. Generally, the listed species are those for which no (correctly identified) specimen could be found at these herbaria.[24]

Aesculus octandra Marsh.
Agoseris cuspidata (Pursh) D. Dietr.
Agrimonia striata Michx.
Agropyron pauciflorum (Schwein.) Hitchc.
Allium mutabile Michx.
Amelanchier laevis Wieg.
Amorpha microphylla Pursh
Anagallis arvensis L.
Anethum graveolens L.
Aquilegia vulgaris L.
Arabis glabra (L.) Bernh.
Arctium lappa L.
Artemisia vulgaris L.
Asclepias pumila (Gray) Vail
Asclepias speciosa Torr.
Aster concinnus Willd.
Aster dumosus L.
Aster × *finkii* Rydb.
Aster patens Ait.
Avena fatua L.
Betula lenta L.
Betula lutea Michx.
Brassica napus L.
Camelina sativa (L.) Crantz.
Carex aenea Fern.
Carex arcta Boott.
Carex pedunculata Muhl.
Carex retrorsa Schw.
Carex straminea Willd.
Carex tenella Schkuhr.
Carex umbellata Schkuhr.
Carya ovalis (Wang.) Sarg.
Catalpa bignonioides Walt.
Celtis laevigata Willd.
Centaurea cyanus L.
Cheiranthus cheiri L.
Clematis viorna L.
Commelina virginica L.
Coreopsis grandiflora Hogg.
Corydalis crystallina Engelm.
Cosmos bipinnatus Cav.
Crataegus phaenopyrum (L. f.) Medic.

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[23]A careful survey of the flora of Scott and Muscatine counties is now being completed by Dr. L. F. Guldner. Because of this study the Herbarium of the Davenport Public Museum, which contains many rarities from Scott and Muscatine counties, was not used to large extent by the present writer. For the same reason the *Flora of Scott and Muscatine Counties* (Barnes *et al.*, 1901), based primarily on specimens desposited in the aforementioned herbarium, was not fully used in the study of pertinent literature. A complete list of references is given in Davidson, 1957.

[24]For details concerning each exclusion see Davidson, 1957.

Crepis tectorum L.
Chrysanthemum parthenium (L.) Pers.
Cuscuta indecora Choisy
Cyperus refractus Engelm.
Delphinium exaltatum Ait.
Dianthus barbatus L.
Dirca palustris L.
Duchesnea indica (Andr.) Focke
Echium vulgare L.
Eleocharis tenuis (Willd.) Schultes
Elymus interruptus Buckl.
Eriophorum viridicarinatum (Engelm.) Fern.
Erysimum parviflorum Nutt.
Eupatorium bruneri Gray
Euphorbia polygonifolia L.
Galinsoga parviflora Cav.
Glyceria fluitans (L.) R. Br.
Helianthus divaricatus L.
Helianthus maximiliani Schrad.
Helianthus subtuberosus Bourg.
Hordeum vulgare L.
Houstonia patens Ell. (*H. pusilla* Schoepf)
Ipomoea coccinea L.
Juncus secundus Beauv.
Lactuca pulchella (Pursh) DC.
Lathyrus latifolius L.
Lechea intermedia Leggett
Lemna minima Philippi
Lemna perpusilla Torr.
Lesquerella gracilis (Hook.) Wats.
Lithospermum officinale L.
Lolium temulentum L.
Lonicera caprifolium L.
Lonicera flava Sims
Lonicera sempervirens L.
Luzula campestris (L.) DC.
Oxalis corniculata L.
Panicum agrostoides Spreng.
Penstemon hirsutus (L.) Willd.
Phlox maculata L.
Plantago eriopoda Torr.
Poa trivialis L.
Polygonum longistylum Small
Polygonum prolificum (Small) B. L. Robinson
Ranunculus hispidus Michx.
Ranunculus macounii Britt.
Raphanus raphanistrum L.
Raphanus sativus L.
Rhus vernix L.
Rorippa obtusa (Nutt.) Britt.
Rosa palustris Marsh.
Rosa woodsii Lindl.
Rubus spp.[25]
Salix lucida Muhl.
Sanicula trifoliata Bickn.
Scirpus subterminalis Torr.
Sedum purpureum (L.) Link
Sedum telephioides Michx.
Selenia aurea Nutt.
Senecio palustris (L.) Hook.
Sisymbrium thalianum (L.) J. Gay

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[25]The literature of southeastern Iowa contains many names of *Rubus* (e.g., *R. argutus, R. baileyanus, R. heterophyllus, R. idaeus, R. nefrens*). Many specimens were examined: all seem best treated as members of the three *Rubus* complexes which are included in the body of this paper. That these groups are outside the usual species concepts is indicated by Huxley's (1940, p. 11) acknowledgement that the blackberries are a taxon to which classical terminology will not apply.

Smilax rotundifolia L.
Solidago bicolor L.
Solidago hispida Muhl.
Solidago rugosa Mill.
Sorghum halepense (L.) Pers.
Stachys schweinitzii Rydb.
Syringa persica L.
Thalictrum dioicum L.
Thaspium trifoliatum (L.) Gray
Trifolium stoloniferum Muhl.
Trillium sessile L.
Veronica serpyllifolia L.
Viburnum prunifolium L.
Viola canadensis Ait.
Viola cucullata Ait.
Viola fimbriatula J. E. Smith
Viola palmata L.
Viola septentrionalis Greene
Vitis rupestris Scheele

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