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ANNUAL REPORT

OF THE

GEOLOGICAL SURVEY

OF

ARKANSAS,

FOR 1888.

IN FOUR VOLUMES:

- VOL. I. ADMINISTRATIVE REPORT.
REPORT UPON THE GEOLOGY OF WESTERN CENTRAL ARKANSAS,
WITH ESPECIAL REFERENCE TO GOLD AND SILVER.
- VOL. II THE NEOZOIC GEOLOGY OF SOUTHWESTERN ARKANSAS.
- VOL. III. THE GEOLOGY OF THE COAL REGIONS.
- VOL. IV. WASHINGTON COUNTY. PLANT LIST.

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State Geologist.

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A LIST OF THE PLANTS OF ARKANSAS.

BY JOHN C. BRANNER AND F. V. COVILLE

INTRODUCTION.*

AID RECEIVED.

Professor Coville's work.—When the work of the Geological Survey of the State was begun in 1887, several collateral branches of work were taken up with the purpose of adding to our knowledge of the natural history of the State in whatever way such additions could be made without interfering with the more direct and specific duties of the Survey. Among other things a list of the plants of the State was begun and added to by the various members of the Survey. In the summer of 1888, Professor F. V. Coville, then Instructor in Botany at Cornell University, now of the Botanical Division of the United States Department of Agriculture at Washington, was induced to spend some months in the State, partly for the purpose of giving proper direction to the botanical work. And it is to Professor Coville's efforts, both in the field and in the laboratory, more than to any other one person's labors, that the present list owes its value.

His field work was done in the vicinity of Little Rock and in Independence county where he made collections of plants and studied their relations to soils and to geologic structure.

*By John C. Branner.

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He has gone carefully over the lists of Nuttall and Lesquereux, has examined all the published papers that relate to or bear upon the botany of the State, and incorporated whatever there is of value in making up such a list in this table. He has also pointed out errors in the old lists and appended notes on many of the species that cannot fail to be of great service in future work on the botany of Arkansas.

It was originally my intention to publish the list as Professor Coville's, but having traveled over every part of the State and having thus had better opportunities for observing its flora I have made additions and changes in it for which he ought not to be held responsible. I have preserved, however, the order of arrangement and all his notes substantially as he handed them in. I wish therefore to give him credit for whatever there may be good in the list and to take upon myself the responsibility for all its defects.

Professor Coville's interesting paper on the general topic of the flora of the State is appended to the list as a proper resume of the subject, while his review of the bibliography of Arkansas is inserted with this introductory part of the paper.

Professor Call's aid.—Besides the botanists referred to in Professor Coville's notes (Nuttall, Lesquereux, Harvey and Butler) several of the assistants of the Geological Survey have cordially co-operated with me in making the list as nearly complete as possible. Professor R. Ellsworth Call, who was engaged for several months on the geology of Crowley's Ridge, has added his observations upon the botany of that portion of the State. Professor Call has a chapter upon the forest trees of eastern Arkansas in Volume II of this Survey's report for 1889, chapter XXIII, pp. 183-202.

Professor Simonds.—Professor Frederic W. Simonds, formerly at the State University, kindly examined the herbarium collected by Professor Harvey and now at that institution, and a number of valuable observations have thus been added by Professor Simonds to the list.

Professor Blatchley.—Professor Willis S. Blatchley, of Terre Haute, Indiana, an experienced botanist and observer, was engaged by the Geological Survey for some months in Independence county, and in studying the borders of the highlands from the Missouri line just west of the St. Louis, Iron Mountain and Southern Railway to near Beebe. During that time and in the region mentioned he made a number of valuable additions to the list, and in other cases confirmed observations made by others.

Professor McNeill.—Professor Jerome McNeill of the State University at Fayetteville, has also made some additions to the list from the flora of Washington county.

Mr. D'Ailly.—Mr. Richard D'Ailly of Little Rock has for many years given more or less attention to the botany of the state. He has kindly given us the benefit of his knowledge in preparing the list. The species reported by him are in his private herbarium in this city.

Authorities—There is some difficulty in giving authorities for reporting the plants mentioned in the list. The more common ones have been observed and recorded by so many of those who have co-operated with us in preparing the list that it has become impracticable to mention all the names in connection with each species. When a plant has been reported by three separate observers therefore the names of the authorities have been omitted altogether. No doubt this omits a certain class of desirable information from the list, but there are urgent reasons for encumbering it as little as possible.

Value of the plant list.—This list makes no pretension to being anything more than a bare list. It gives nothing or next to nothing about geographic distribution, and does not even pretend to say whether the plants mentioned are rare, common or abundant. But aside from its scientific interest, even such a bald list of the native plants of the state has important economic value.

The number of grapes that grow wild through the state, and the great size of the vines, suggest as plainly as Nature can suggest anything, that our state is unusually well adapted to grape culture.

Much might be said of the distribution of the timber and of the industries of the state based upon it. Such a paper, however, to have any value, would require much more time and labor in gathering the statistics of geographic distribution, manufacture and exportation, than it has been possible for the Geological Survey to give the subject. This is a work, however, which ought to be done, and which must be done when we cease to deal in generalities and undertake to let the world know specifically what our natural resources are in this direction. Our endless forests of yellow pine, our vast cypress swamps, our sweet gum, oak, holly, hickory, cedar and other forest trees are but a part of the plant wealth of the state. More modest but quite as useful plants are usually overlooked, our abundant tannin producing plants are not utilized; forage plants, of which we have not a few, contribute their share to our natural advantages; plants of medicinal properties abound, while our wild flowers vie in beauty with the brightest and fairest in the world.

It is hoped and believed that the publication of this list will encourage the study of botany here for its own sake, and that this list will be greatly lengthened and improved by local observers. There is perhaps no state in the Union having so rich and varied a flora, no state in which such large numbers of subtropical plants meet equal numbers of northern ones, as in Arkansas.

BIBLIOGRAPHY AND EXPLORATIONS.*

The work of Nuttall.—The botanical work done in Arkansas up to 1887, when the work of the present Geological Survey began, was confined to a few individuals and a few exploring parties. The earliest explorer was Thomas Nuttall, one of the

*The bibliography has been prepared by Professor Coville.

prominent early American naturalists. He spent several years in the territory, as it then was, most of his time being occupied in botanical observations. The results of these observations were not published as a report, but at odd times and in different places. They are all long out of print.

“Journal of Travels Into Arkansas Territory, 1819: By Thomas Nuttall, p. 236, Phila., 1821.” This book has not been obtained by the writer, and no sketch of its contents can be given.

“A Description of Some New Species of Plants Recently Introduced Into the Gardens of Philadelphia, from the Arkansas Territory: By Thomas Nuttall. Jour. Phil. Acad. Sci., Vol. II, pp. 114-123; Phila., 1821.” Twelve species of Arkansas plants are described.

“Description of Two New Genera of the Natural Order Cruciferæ: By Thomas Nuttall. *Ibid.*, Vol. V, pp. 132-135.” The plants are *Selenia aurea* and *Streptanthus maculatus*; the latter from Red River, the former from the Arkansas.

“Collections Toward a Flora of the Territory of Arkansas: By Thomas Nuttall. Transactions of the American Philosophical Society, Vol. II (New Series), pp. 139-203. Philadelphia, 1837.” There are included two fungi, and several Pteridophyta, the remainder being flowering plants, some newly described. The paper appears to be a list of all the plants, so far as it goes, found in Arkansas up to the time of publication. But the Polypetalæ and several orders of the Gamopetalæ (one of the Compositæ) are omitted.

The work of Lesquereux.—In the year 1859, Prof. Leo Lesquereux was engaged by the geological survey then being carried on by the state under the direction of David Dale Owen, to make an examination of the botany, both fossil and recent. Only the last three months of the year were spent in the field. Lesquereux's report is published in the “Report of the Second Geological Survey of Arkansas, pp. 295-399. Philadelphia, 1860.” It includes a sketch of the botanical features

of several of the northern counties; of the vegetation of the Mammoth Spring, of Fulton county; some general notes on distribution, and a list of the plants collected by himself and Nuttall.

Pacific Railway reports.—In the year 1853 the exploring party of the Pacific railroad survey passed through the state, by way of the Arkansas River. A brief sketch of the route is given in the survey's catalogue of plants. Those of Arkansas are however omitted.

Sketch of the route from Napoleon to Fort Smith. By J. M. Bigelow. Pacific R. R. Reports, Vol. IV, p. 1.

Butler's list.—In the Botanical Gazette for May, 1877 (Vol. II, p. 104), a nominal list of 101 species of plants found in Arkansas, not included in Lesquereux's catalogue, is given, by George D. Butler, of Limestone Gap, Indian Territory.

Harvey's work.—From 1875 to 1885, Professor F. L. Harvey, then at the Arkansas Industrial University at Fayetteville, made extensive collections of plants, which have found their way to many of the larger herbaria of this country and Europe. His private herbarium was purchased by the University, where it is preserved. A complete account of his collections has never been published, but the herbarium at Fayetteville has been carefully examined and its Arkansas species included in the plant list of the state, the nomenclature being revised. Professor Harvey has, however, written several shorter articles that refer to the botany of the state.

"The Forest Trees of Arkansas, American Journal of Forestry, June and July, 1883." Also reprinted separately, pp. 1-20. This article gives a list of 120 species of arboreal plants, with an account of their distribution in the state.

Many notes on the occurrence and distribution of species are given by Professor Harvey in the Botanical Gazette, as follows: Vol. V, pp. 15, 39, 84, 91, 139; Vol. VI, pp. 189, 213, 215, 230, 273; Vol. VIII, p. 355; Vol. IX, pp. 195, 196; Vol. X, p. 279.

The article, in two parts, beginning on page 188 of Vol. VI, is an enumeration of the ferns of Arkansas, with their distribution. The same author has also a note on the flora of Arkansas in the *American Naturalist*, Vol. XV, p. 388.

Other sources of information.—Some notes on the size and occurrence of a few trees are given by John A. Warder in the *Botanical Gazette*, Vol. VI, p. 188.

In the Report on the Forests of North America, Vol. IX, by Professor Charles S. Sargent, of the Tenth Census of the United States, pp. 543, 544, is given a short sketch of the forests of Arkansas; an estimate of the standing short-leaved pine (*Pinus mitis*); and a map of the pine, hardwood and prairie lands of the state, probably prepared for that volume by Professor Harvey.

In 1884, the firm of Higgins & Bro., of St. Louis, Mo., published a series of maps of the state, one of which gives outlines of the hardwood, pine and prairies of the state, the areas being compiled from the notes of the original United States land surveys.

Mr. G. W. Letterman, of Allenton, Missouri, and a few of Professor Harvey's former students at the Industrial University, have also done some botanical work in the state.

Nomenclature.—The oldest specific or varietal names are used in this list (not going back of Linnæus' *Species*, 1753) under whatever genera they may originally have been employed. On this principle Professor William Trelease, Director of the Missouri Botanical Gardens at St. Louis, has kindly revised the list. It is but just to Professor Trelease to add, however, that the time that could be allowed for this revision was too short to admit of the necessary investigations in all cases, so that a few plants appear under questionable names current in Gray's *Manual* or other works in general use.

A LIST OF THE PLANTS OF ARKANSAS.

RANUNCULACEÆ.
Clematis, L.*crispa*, L.; d'Ailly.*ochroleuca*, Ait.; Lesquereux.*pitcheri*, Torr. & Gr.*viorna*, L.*virginiana*, L.*Thalictrum*, L.

purpurascens, L. Probably all reported as *T. cornuti* by d'Ailly, Harvey and Lesquereux belongs here.

Anemonella, Spach.*thalictroides*, (L.) Spach.*Anemone*, L.

acuta (Pursh.) Britton, Mem. Torrey Club, II, 42; Lesquereux.

decapetala, L. Perhaps two species have been reported under the name *A. caroliniana*.

hepatica, L.; Lesquereux. This may be *A. acuta*.

heterophylla, Nutt. in Torr. & Gr., H., I, 12, as synonym of a variety; Nuttall, d'Ailly.

virginiana, L.*Myosurus*, L.*minimus*, L.; Nuttall, d'Ailly.*Ranunculus*, L.*abortivus*, L.*var. grandiflorus*, Engelm.; Harvey.*var. harveyi*; Gray.*var. micranthus*, (Nutt), Gray; Harvey.*fascicularis*; Muhl.

multifidus, Pursh. ; Lesquereux ; d'Ailly as *R. purshii*.

For remarks on nomenclature, see Greene,
Pittonia, II, 8.

muricatus, L. ; d'Ailly.

oblongifolius, Ell. ; d'Ailly, Harvey.

parviflorus, L. ; d'Ailly, Harvey.

pennsylvanicus, L. f. ; Harvey.

pusillus, Poir.

recurvatus, Poir. Along Polk Bayou near Batesville,
Coville.

sceleratus, L. ; Harvey.

septentrionalis, Poir. Includes most if not all that
has passed for *R. repens*.

trachyspermus, Engelm. ; Harvey. Out of the range
assigned this species by Dr. Gray.

Caltha, L.

palustris, L. ; Lesquereux.

Hydrastis, L.

canadensis, L.

Isopyrum, L.

biternatum, (Raf.), Torr. & Gr. ; Pitcher, Harvey.

Aquilegia, L.

canadensis, L.

Delphinium, L.

azureum, Michx.

consolida, L. ; Harvey.

tricorne, Michx.

Cimicifuga, L.

racemosa, (L.) ; Nutt.

MAGNOLIACEÆ.

Magnolia, L.

acuminata, L. Abundant on Crowley's Ridge, Call.

glauca, L. ; Lesquereux.

macrophylla, Michx. ; Crowley's Ridge, Call.

tripetala, L. (M. umbrella, Lam.) ; d'Ailly, Harvey.

Liriodendron, L.

tulipifera, L. Abundant along Crowley's Ridge.

ANONACEÆ.

Asimina, Adans.

triloba, (L.); Dunal.

MENISPERMACEÆ.

Menispermum, L.

canadense, L.

BERBERIDACEÆ.

Podophyllum, L.

peltatum, L.

NYMPHÆACEÆ.

Brasenia, Schreb.

nymphiodes, (Thumb.) Baillon. (*B. peltata*, Prush.).

Castalia, Salisb.

odorata, (Dryanda), Greene ; Nuttall, Lesquereux.

reniformis, (D. C.) Swamp near Little Rock, Co-ville.

Nymphæa, L.; Emend.

advena, Solander.

Nelumbo, Adanson.

lutea, (Willd.) Pers.

PAPAVERACEÆ.

Argemone, L.

mexicana, L.

Stylophorum, Nutt.

diphyllum (Michx.), Nutt ; Lesquereux.

Sanguinaria, L.

canadensis, L.

Dicentra, Borck.

cucullaria, (L.), DC. ; 'Butler, Harvey. For a possible explanation of the origin of the original name of Borckhausen, *Diclytra*, see Hitchcock, Trans. St. Louis Academy, V., 477.

Corydalis, DC.*aurea*, (Michx.) Willd; Nuttall, Torr. & Gray.*crystallina*, Engelm; Harvey.*flavula*, (Raf.) DC.; d'Ailly.*micrantha*, (Engelm.) Gray; Harvey.**CRUCIFERÆ.***Nasturtium*, R. Br.*amphibium*, (L.) R. Br.; Nuttall. It is doubtful whether Nuttall found the true *N. amphibium*, Coville.*lacustre*, Gray; Harvey.*officinale*, R. Br.; Lesquereux.*sessiliflorum*, Nutt. On muddy banks of the Arkansas River near Little Rock, Coville.*sinuatum*, Nutt.*tanacetifolium*, (Walt.) Hook. & Arnott.; Torrey and Gray.*Arabis*, L.*canadensis*, L.*confinis*, S. Watson. Limestone cliffs in the northwest, Harvey (as *A. drummondii*.)*hirsuta*, (L.) Scop.; Lesquereux, Harvey.*lævigata*, (Muhl.) Poiret.*ludoviciana*, Meyer; Torr. & Gr., Harvey. The name *A. virginica* (L.) may perhaps be adopted for this, since it is in part the *Cardamine virginica*, of L. Sp., 656.*perfoliata*, Lam.; Harvey.*Streptanthus*, Nutt.*maculatus*, Nutt.; Nuttall, Sabine.*Thelypodium*, Endl.*pinnatifidum*, (Michx.) S. Watson; Pitcher.*Cardamine*, L.*bulbosa*, (Schreb.) BSP. (*C. rhomboidea*, DC.); d'Ailly, Harvey.

hirsuta, L. ; Nuttall, d'Ailly.

laciniata, (Muhl.) Wood ; Harvey, under *Dentaria*.

Leavenworthia, Torr.

aurea, Torr. ; Leavenworth.

michauxii, Torr. ; Harvey.

Selenia, Nutt.

aurea, Nutt. ; Nuttall, Harvey.

Lasquerella, S. Wats. (*Vesicaria* of most writers).

gracilis, (Hook.) S. Wats. ; Nuttall, Leavenworth.

Perhaps extralimital, Coville.

nuttallii (Torr. & Gr.), S. Wats. ; Nuttall, Leavenworth.

repanda, (Nutt.) S. Wats. ; Pitcher.

Draba, L.

brachycarpa, Nutt.

caroliniana, Walter,

var. micrantha, Gray ; Nuttall.

cuneifolia, Nutt. ; Nuttall, Harvey.

Sisymbrium, L.

pinnatum, (Walt.) Greene ; (*S. canescens*, Nutt).

Erysimum, L.

asperum, DC.

var. arkansanum, Gray ; Nuttall.

cheiranthoides, L. ; Nuttall.

Capsella, Moench.

bursa-pastoris, (L.) Moench:

Senebiera, Poir.

didyma, (L.) Pers.

Lepidium, L.

menziesii, DC. ; Harvey.

virginicum, L.

CAPPARIDACEÆ.

Cleome, L.

pungens, Willd. ; d'Ailly.

serrulata, (Pursh.) Torr. & Gr. ; Nuttall, James.

Cleomella, DC.

angustifolia, Torr. ; James.

Gynandropsis, DC.

pentaphylla, (L.) DC. ; Sandy river banks in northwest Arkansas, Harvey.

Cristatella,

erosa, Nutt. Probably extralimital, Coville.

jamesii, Torr. & Gr. ; James.

Polanisia, Raf.

dodecandra, (Michx.) BSP.

CISTACEÆ.

Helianthemum, Pers.

capitatum, Nutt. ; Nuttall, Leavenworth.

Lechea, L.

leggettii, Britt. & Holl. (*L. minor*, Lam.) ; Torr & Gr., Lesquereux.

minor, L. (*L. major*, Michx.).

tenuifolia, Michx. Dry sandy woods, at the south end of Main street, Little Rock, Coville ; Harvey.

VIOLACEÆ.

Viola, L.

blanda, Willd.

hastata, Michx. ; Lesquereux.

palmata, L.

var. cordata, (Walt.) BSP. ; Harvey.

var. cucullata, (Ait.) Gray.

pedata, L. ; Lesquereux, Harvey.

pedatifida, Don. (*V. delphinifolia*, Nutt.) ; Harvey.

pubescens, Ait.

sagittata, Ait.

tricolor, L.,

var. arvensis, DC.

Ionidium, Vent.

polygalæfolium, Vent. ; Nuttall.

Solea, Ging.*concolor* (Forst.), Ging.; Nuttall.**POLYGALACEÆ.***Polygala*, L.*ambigua*, Nutt.; Grand Prairie, Harvey.*fastigiata*, Nutt.; Lesquereux.*incarnata*, L.*lutea*, L.; Lesquereux.*nuttallii*, Torr. & Gr.; Grand Prairie, Harvey.*sanguinea*, L.*senega*, L. Low ground in northwest Arkansas,
Harvey.*verticillata*, L.*Krameria*, L.*secundiflora*, DC.; Nuttall. Probably extralimital,
Coville.**CARYOPHYLLACEÆ.***Saponaria*, L.*officinalis*, L.*Silene*, L.*antirrhina*, L.; Lesquereux, Harvey.*regia*, Sims.; Harvey.*stellata*, (L.) Ait., f.*virginica*, L.*Lychnis*, L.*githago* (L.), Lam.*Cerastium*, L.*nutans*, Raf.; Butler.*viscosum*, L.; Harvey.*vulgatum*, L.*Stellaria*, L.*macropetala*, Torr. & Gr.*nuttallii*, Torr. & Gr.; Nuttall, Pitcher.*prostrata*, Baldw.; Harvey.

Arenaria, L.

- michauxii* (Feuzl.), Hook. f.; Torr. & Gr., Lesquereux.
patula, Michx. (*A. pitcheri*, Nutt.)
serpyllifolia, L.; Harvey.
tenella, Nutt.; Nuttall.

Sagina, L.

- decumbens* (Ell.), Torr. & Gr.; Harvey.
procumbens, L.; d'Ailly, Harvey.

PORTULACACEÆ.*Portulaca*, L.

- oleracea*, L.; Lesquereux, d'Ailly.
pilosa, L.

Talinum, Adans.

- teretifolium*, Pursh.

Claytonia, L.

- caroliniana*, Michx.
virginica, L.

ELATINACEÆ.*Bergia*, L.

- texana*, Seub.; Harvey.

HYPERICACEÆ.*Ascyrum*, L.

- crux-andreæ*, L.
stans (Pers.), Michx.

Hypericum, L.

- adpressum*, Bart.; Nuttall, Lesquereux.
canadense, L.; Lesquereux.
cistifolium, Lam.; Leavenworth, Lesquereux.
densiflorum, Pursh; Grand Prairie, Harvey.
drummondii (Grev. & Hook.); Torr. & Gr.
ellipticum, Hook.; Harvey.
gentianoides (L.), BSP. Frequent in very thin soil on flat-topped rocks throughout Independence county, Coville (as *H. nudicaule*, Walt.); Harvey (as *H. sarothra*, Michx.).

gymnanthum, Engelm. & Gr. Grand Prairie, Harvey.

lobocarpum, Gattinger. Found by Dr. H. E. Hasse, formerly of Little Rock, "in wet pine barrens," *fide*, Dr. August Gattinger in "The Tennessee Flora;" on hilltops in Independence county, Coville.

maculatum, Walt.; also as *E. corymbosum*, Muhl.; Harvey.

mutilum, L.

prolificum, L.; Lesquereux, Harvey.

Elodea, Juss.; emend.

petiolata (Walt.), Pursh.

MALVACEÆ.

Althæa, L.

officinalis, L.

Malva, L.

rotundifolia, L.

Callirrhoe, Nutt.

digitata, Nutt.

involucrata (Nutt.), Gray; Harvey.

papaver (Cav.), Gray; Leavenworth.

Sida, L.

spinoza, L.

Abutilon, Gærtn.

avicennæ, Gærtner.

Modiola, Mœnch.

caroliniana (L.), Don. (*M. multifida*, Mœnch.); d'Ailly, Harvey.

Hibiscus, L.

grandiflorus, Michx. A specimen has been received from Col. W. B. Clark, Beebe, White county. Coville.

militaris, Cav.; Harvey.

TILIACEÆ.*Tilia*, L.*americana*, L.*pubescens*, Ait.; Coville.**LINACEÆ.***Linum*, L.*lewisii*, Pursh. (*L. Perenne*, L. var.)*rigidum*, Pursh; Harvey.*striatum*, Walt.; Harvey.*sulcatum*, Riddell; Butler.*virginianum*, L.**GERANIACEÆ***Geranium*, L.*carolinianum*, L.*maculatum*, L.*Oxalis*, L.*corniculata*, L.var. (?), *macrantha*, Trel.var. *stricta* (L.), Sav.*violacea*, L.*Impatiens*, E.*aurea*, Muhl. (*I. pallida*, Nutt.)*biflora*, Walt. (*I. fulva*, Nutt.)**RUTACEÆ.***Xanthoxylum*, L.*clava-herculis*, L.var. *fruticosum*, Gray; Nuttall.*Ptelea*, L.*trifoliata*, L.**SIMARUBACEÆ.***Ailanthus*, Desf.*glandulosus*, Desf.

AQUIFOLIACEÆ*Ilex*, L.

cassine, L. (*I. dahoon*, Walt.); d'Ailly.

decidua, Walt.; Lesquereux, Harvey at Texarkana.

opaca, Ait. Forests of holly are especially abundant in the southern part of the State, where trees two feet in diameter are common.

verticillata (L.), Gray; Lesquereux.

vomitaria, Ait. (*I. cassine*, Walt.); Lesquereux, Harvey.

CELASTRACEÆ.*Euonymus*, L.

americanus, L. Hot Spring county, d'Ailly; between Bradford and Denmark, Independence county, Coville.

atropurpureus, Jacq.

RHAMNACEÆ.*Berchemia*, Neck.

scandens (Hill), Trelease; (*B. volubilis*, DC.)

Rhamnus, L.

caroliniana, Walt.

Ceanothus, L.

americanus, L.

VITACEÆ.*Vitis*, L.

æstivalis, Michx. This includes *V. labrusca* of Torrey and Gray, d'Ailly, and Lesquereux, so far as Arkansas is concerned.

cordifolia, Michx.

riparia, Michx.

vulpina, L.

Cissus, L.

incisa (Nutt.), Ch. Desm. (*Vitis incisa*, Nutt.)

Ampelopsis, Michx., emend.

arborea, (Willd.) Michx.; Torrey & Gray, Coville (as
Vitis arborea); d'Ailly (as *V. bipinnata*).

Parthenocissus, Planch.

quinquefolia (L.), Planchon. (*Ampelopsis quinquefolia*,
Michx.)

SAPINDACEÆ.

Sapindus, L.

marginatus, Willd.

Æsculus, L.

pavia, L.

Acer, L.

rubrum, L.

saccharinum, L. (*A. dasycarpum*, Ehrh.)

saccharum, Marsh. (*A. saccharinum*, Wang.)

var. nigrum (Michx. f.), Britt.

Negundo, Mœench.

aceroides, Mœench.

Staphylea, L.

trifolia, L.

ANACARDIACEÆ.

Rhus, L.

aromatica, Ait.

copallina, L.

(*cotinooides*, Nutt. Found as yet only over the border
in Indian Territory, by Nuttall, Coville.)

glabra, L.

radicans, L. (*R. toxicodendron*, L.)

typhina, L.

LEGUMINOSÆ.

Baptisia, Vent.

australis (Willd), R. Br.; Torr. & Gray, Leavenworth.

lanceolata (Walt.), Ell.; Nuttall.

leucantha, Torr. & Gr.

leucophæa, Nutt.

- sphaerocarpa*, Nutt.
villosa (Walt.), Nutt.; Nuttall.
- Crotalaria*, L.
sagittalis, L.
- Trifolium*, L.
arvense, L.; Lesquereux.
carolinianum, Michx.; Torrey & Gray.
pratense, L.
procumbens, L.; d'Ailly.
reflexum, L.
repens, L.
- Hosackia*, Dougl.*
sericea (Pursh.), (*H. purshiana*, Benth.)
- Psoralea*, L.
cuspidata, Pursh; Leavenworth.
digitata, Nutt.
linearifolia, Torr. & Gr.; Beyrich.
melilotoides, Michx.
simplex, Nutt.; Nuttall.
tenuiflora, Pursh.
- Amorpha*, L.
canescens, Pursh.
fruticosa, L.
paniculata, Torr. & Gr.; Leavenworth.
- Dalea*, L.
alopecuroides, Willd.
aurea, Pursh; Leavenworth.
lanata, Spreng.; Nuttall, Harvey.
laxiflora, Pursh; Leavenworth. The earliest name
 is *D. enneandra*, Nutt. in Fraser's Catalogue,
 No. 30, accompanied by partial description.
- Petalostemon*, Michx.
candidus (Willd.), Michx.

*For a discussion of the North American species under the genus *Lotus*, with their synonyms when so placed, see Greene, Pittonia, II., 133.

decumbens, Nutt.; Nuttall.

gracilis, Nutt. Dry sandy woods, at the south of
Main street, Little Rock, Coville.

multiflorus, Nutt.; Nuttall, Leavenworth.

phleoides, Torr. & Gr.; Leavenworth.

violaceus (Willd.), Michx.

Indigofera, L.

anil, L.; Butler.

leptosepala, Nutt.; Nuttall, James.

Tephrosia, Pers.

onotrychoides, Nutt.

spicata (Walt.), Torr. & Gr.

virginiana (L.), Pers.

Wistaria, Nutt.

frutescens (Walt.), Poir.

Robinia, L.

pseudacacia, L.

Sesbania, Pers.

macrocarpa, Muhl.

Astragalus, L.

canadensis, L.

caryocarpus, Ker.

distortus, Torr. & Gr.

mexicanus, DC.

nuttallianus, DC.

Glycyrrhiza, L.

lepidota, Pursh; Torr & Gray.

Æschynomene, L.

virginica (L.), (*A. hispida*, Willd.); Lesquereux, Harvey.

Stylosanthes, Sw.

biflora (L.), BSP. (*S. eliator*, Swartz.)

Desmodium, Desv.

canadense (L.), DC.; Lesquereux, Harvey.

canescens (L.), DC.; Lesquereux.

ciliare (Muhl.), DC.; Harvey.

cuspidatum (Muhl.), Hook.

dillenii, Darl.; Harvey.

grandifolium (Walt.), DC.; Lesquereux, Harvey (as
D. acuminatum.)

lævigatum (Nutt.), DC.; Torrey & Gray.

marilandicum (L.), Boot.; Harvey.

nudiflorum (L.), DC.; Lesquereux, Harvey.

paniculatum (L.), DC.; Lesquereux, Harvey.

pauciflorum (Nutt.), DC.

rigidum (Ell.), DC.; Leavenworth.

rotundifolium (Michx.), DC.; Harvey; about Brad-
ford, Blatchley.

sessilifolium (Torr.), Torr. & Gr.; Torrey and Gray,
Lesquereux.

strictum (Pursh.), DC.; Northwest Arkansas, Harvey.

viridiflorum (L.), Beck.

Lespedeza, Michx.

frutescens (Willd.), Ell. (*L. capitata*, Michx.)

hirta (L.), Ell.; Lesquereux, Harvey.

repens (L.), Bart.

reticulata (Muhl.), Pers.; Harvey.

striata, Hook. & Arn.

stuevei, Nutt.

violacea (L.), Pers.

Vicia, L.

americana, Muhl.; Lesquereux, Harvey.

caroliniana, Walt.; Lesquereux.

leavenworthii, Torr. & Gr.; Leavenworth.

micrantha; Nutt.; Nuttall, d'Ailly.

Lathyrus, L.

pusillus, Ell.

venosus, Muhl.; d'Ailly.

Centrosema, DC.

virginianum (L.), Benth.; Harvey.

Clitoria, L.

mariana, L.

Amphicarpæa, Ell.

comosa (L.), Ridd. (*A. monoica*, Ell.)

pitcheri, Torr. & Gr.; Pitcher.

Apios, Moench.

tuberosa, Moench.

Galactia, P. Browne.

pilosa, Ell.; Torr. & Gr. The plant reported by Butler under the name *G. mollis*, Michx., is probably also of this species, Coville.

Dioclea, HBK.

boykinii, Gray; Leavenworth, Harvey.

Phaseolus, L.*

helvolus, L. This may, perhaps, also include the *P. diversifolius* of Butler and Harvey. A form referred to here as a possible variety was found in a pine barren west of Little Rock by Coville.

pauciflorus, Benth.; Leavenworth, Butler.

Vigna, Savi.

luteola (Jacq.), Benth.; Harvey.

Rhynchosia, Lour.

latifolia, Nutt.

tomentosa (L.), Hook. & Arn.; Lesquereux.

var. erecta (Walt.), Torr. & Gr.

var. volubilis (Michx.), Torr. & Gr.; Coville,
Blatchley.

Sophora, L.

affinia, Torr. & Gr.

Gymnocladus, Lam.

disicus (L.), Koch. (*G. canadensis*, L.) Abundant along Crowley's Ridge.

*These species are restored to Elliott's genus *Strophostyles* in the Sixth Edition of Gray's Manual.

Gleditschia, L.

- inermis*, Miller. (*G. monosperma*, Walt.); Harvey.
tracanthos, L. Abundant in rich bottoms.
var. brachycarpus, Michx.; Nuttall.

Cassia, L.

- chamæcrista*, L.
marilandica, L.
nictitans, L.; d'Ailly, Butler.
occidentalis, L. Abundant as a weed on village commons in the White River valley; Coville.
tora, L.; James; sand-bars, Washington county, Harvey (as *C. obtusifolia*, L).

Cercis, L.

- canadensis*, L.

Neptunia, Lour.

- virgata* (Bartr.). (*N. lutea*, Benth.); Nuttall, Leavenworth.

Desmanthus, Willd.

- brachylobus* (Willd.), Benth.
cooleyi (Eaton), (*D jamesii*, Torr. & Gr.); James.
leptolobus, Torr. & Gr.

Schrankia, Wild.

- angustata*, Torr. & Gr. At the south end of Main street, Little Rock; Coville.
intsia (Walt.), (*S. uncinata*, Willd).

Acacia, Willd.

- filicoides*. (Cav.) (*A. filicina*, Willd).

ROSACEÆ.*Prunus*, L.

- angustifolia*, Marsh. (*P. chिकास*, Michx).
americana, Marsh.
caroliniana, Ait.
pumila, L.; Torrey & Gray; Lesquereux.
serotina, Ehrh.

Spiræa, L.*aruncus*, L.; Nuttall; Harvey.*tomentosa*, L.; Grand Prairie; Harvey.*Neillia*, Dow.*opulifolia* (L.), Bent. & Hook; Lesquereux, Harvey.*Gillenia*, Moench.*stipulata* (Muhl.) (*G. stipulacea*, Nutt.)*trifoliata* (L.), Moench.; Washington county; Harvey.*Rubus*, L.*canadensis*, L.*cuneifolius*, Pursh; Lesquereux, Harvey.*hispidus*, L.; Harvey.*trivialis*, Michx.; Torrey & Gray, Lesquereux.*villosus*, Ait.*Geum*,*album*, Gmel.*vernum* (Raf.), Torr. & Gr.; Harvey.*Fragaria*, L.*indica*, Andr.; d'Ailly, Harvey.*virginiana*, Duchesne.*Potentilla*, L.*canadensis*, L.*Agrimonia*, L.*eupatoria*,*parviflora*, Ait.*Poterium*, L.*annuum*, Nutt.; Nuttall, Leavenworth.*Rosa*, L.*blaneta*, Ait.*var. arkansana* (Porter), Best.*carolina*, L.; Harvey.*foliolosa*, Nutt.; Pitcher, Bigelow, *fide* Watson in Proc. Am. Acad., xx, p. 349; Coville.*humilis*, Marsh.; Fendler, *fide* Watson, l. c., p. 348; Coville. The plant that Lesquereux called

R. lucida undoubtedly belongs here, the two species not being separated when his list was made—Coville.

setigera, Michx.; Lesquereux; also Bigelow and Harvey, *vide* Watson, l. c., p. 350; Ehrhart; Blatchley near Bradford by railway.

Pirus, L.

arbutifolia (L.), L. f.

coronaria, L.; Harvey; Crowley's Ridge, Call.

Cratægus, L.

æstivalis (Walt.), Torr. & Gray.

apiifolia (Marsh.), Michx.; Harvey, Blatchley.

arborescens, Ell.; Harvey.

coccinea, L.

cordata (Mill.), Ait.; Harvey.

crus-galli, L.

flexispine (Moench.), Sargent. (*C. flava*, Ait.); Lesquereux.

spathulata, Michx.

subvillosa, Schrad.; Letterman, *vide* Harvey.

Some specimens collected in Independence county, at the junction of Power's Creek and the Salado by Coville.

tomentosa, L.

var. punctata (Jacq.), Gray; Lesquereux.

Amelanchier, Linde.

canadensis (L.), Med.

var. obovalis (Michx.), BSP.

(*var. oblongifolia*, Torr. & Gr.)

SAXIFRAGACEÆ.

Heuchera, L.

americana, L.

hallii, Gray; Porter, *vide* Wheelock.

villosa, Michx.; Harvey (but out of the range assigned to the species by Wheelock.)

Saxifraga, L.

virginiensis, Michx.; Lesquereux, Coville.

Parnassia, L.

caroliniana, Michx.; Lesquereux, d'Ailly.

Hydrangea, L.

arborescens, L.

Philadelphus, L.

inodorus, L. On a rocky copse, at the south margin of the White River bottom, near Batesville; Coville.

Itea, L.

virginica, L. Along Duparty Creek, Independence county, Coville; Hot Spring county, d'Ailly.

Ribes, L.

aureum, Pursh.; Torrey & Gray.

var. tenuiflorum (Lindl.), Torrey; Torrey & Gray.

floridum, L. Her.; Lesquereux.

CRASSULACEÆ.

Sedum, L.

nevii, Gray. A dead fruiting specimen of a plant answering to the generic description of *Diamorpha*, but certainly not *D. pusilla*, was found in one place in Independence county, in dry limestone soil. It is probably *Sedum nevii*; Coville.

pulchellum, Michx.

ternatum (Haw.), Michx.; Lesquereux.

torreyi, Don.

Penthorum, L.

sedoides, L.

DROSERACEÆ.

Drosera, L.

capillaris, Poir.; d'Ailly.

HAMAMELACEÆ.

- Hamamelis*, L.
 virginica, L.
Liquidambar, L.
 styraciflua, L.

HALORAGEÆ.

- Proserpinaca*, L.
 palustris, L.
Myriophyllum, L.
 heterophyllum, Michx.
 pinnatum (Walt.), BSP. (*M. scabratum*, Michx.);
 Nuttall, Lesquereux.
 spicatum, L.; Nuttall, Lesquereux.

CALLITRICHACEÆ.

- Callitriche*, L.
 autumnalis, L.; Lesquereux.
 nuttallii, Torr.; Nuttall.
 peploides, Nutt.; Nuttall.
 verna, L.; Nuttall, Lesquereux.

MELASTOMACEÆ.

- Rhexia*, L.
 mariana, L.; Russell, Bald Knob, etc., low ground,
 second bottoms, Blatchley; Texarkana,
 Harvey.
 virginica, L.; Torrey & Gray; Washington county,
 Harvey.

LYTHRACEÆ.

- Ammannia*, L.
 latifolia, L.
 ramosior, L. (*A. humilis*, Michx.); Butler, Harvey.
Peplis, L.
 diandra, Nutt. (*Didiplis linearis*, Raf.); Nuttall.
Cuphea, P. Br.
 petiolata (L.), Koehne (*C. viscosissima*, Jacq.)

Lythrum, L.

alatum, Pursh.

ONAGRACEÆ,

Epilobium, L.

coloratum, Muhl.; Harvey.

Jussiaea, L.

decurrens (Walt.), DC.

octonervia, Lam.

pilosa, HBK.; Torrey & Gray.

repens, L.

Ludwigia, L.

alternifolia, L.

cylindrica, Ell.; Argenta, Harvey.

hirtella, Raf.; d'Ailly.

palustris (L.), Ell.

polycarpa, Short & Peter; Lesquereux.

Enothera, L.

biennis, L.

fruticosa, L.

linifolia, Nutt.

rhubipetala, Nutt.; Nuttall, Engelmann.

serrulata, Nutt.; Nuttall, Leavenworth.

sinuata, L.

speciosa, Nutt.

triloba, Nutt.

Gaura, L.

biennis, L.

coccinea, Nutt.; Torrey & Gray.

filipes, Spach.; Torrey & Gray, Lesquereux.

parviflora, Dougl.; Nuttall, James.

sinuata, Nutt.; Nuttall.

villosa, Torr. "Arkansas? Mr. Beyrich." Torrey & Gray, Coville.

Stenosiphon, Spach.

virgatum, Spach.; Nuttall, Lesquereux.

Circæa, L.

lutetiana, L.

LOASACEÆ.

Mentzelia, L.

oligosperma, Nutt.; Torrey & Gray, Nuttall.

PASSIFLORACEÆ.

Passiflora, L.

incarnata, L.

lutea, L.; Newark, Independence county, Blatchley;
Washington county, Harvey.

CUCURBITACEÆ.

Melothria, L.

pendula, L.

Trianosperma, Mart.

boykinii (Torr. & Gr.), Roem. (*Bryonia boykinii*, Torr.
& Gr.); Arkansas City, Harvey.

Sicyos, L.

angulatus, L.

CACTACEÆ.

Opuntia, Mill.

engelmanni, Salm.; on Crowley's Ridge, Call.

missouriensis, DC.

rafinesquii, Engelm.

FICOIDEÆ.

Mollugo, L.

verticillata, L.

UMBELLIFERÆ.

Hydrocotyle, L.

umbellata, L.

verticillata, Thunb. (*H. interrupta*, Muhl.); d'Ailly.

Eryngium, L.

baldwinii, Spreng.

diffusum, Torr.; James.

leavenworthii, Torr. & Gr.; Leavenworth.

virginianum, Lam.; Lesquereux.

yuccæfolium, Michx.

Sanicula, L.

marilandica, L.

var. canadensis (L.), Torr.; Newark and Black
Rock on high grounds, Blatchley.

Eulophus, Nutt.

americanus, Nutt; Nuttall.*

Bupleurum, L.

rotundifolium, L.; Harvey.

Leptocaulis, Nutt.

divaricatus, DC.; Nuttall.

echinatus, Nutt.; Nuttall.

Apium, L.

leptophyllum (DC.), F. Muehl.; Nuttall.

Apiastrum, Nutt.

patens (Nutt.), C. & R.; Nuttall.

Circuta, L.

virosa, L.,

var. maculata (L.), Coult. & Rose.

Berula, Koch.

angustifolia (L.), Koch.; Lesquereux.

Pimpinella, L.

integerrima (L.), Benth. & Hook. (*Zizia integerrima*.)

Cryptotaenia, DC.

canadensis (L.), DC.; Washington county, Harvey.

Osmorrhiza, Raf.

claytoni (Michx.—*O. brevistylis*, DC.); Argenta, Har-
vey.

longistylis (Torr.), DC.; Butler, Harvey.

Cherophyllum, L.

procumbens (L.), Crantz.

var. shortii, Torr. & Gr.; *fide* Coulter and Rose.

var. tainturieri (Hook.), C. & R.

Cynoscadium, DC.

digitatum, DC.

pinnatum, DC.

Discopleura, DC.

capillacea (Walt.), DC.; Butler.

var. nuttallii (DC.), C. & R.; Prairies, Harvey.

Cymopterus, Raf.

glomeratus, Raf.; Nuttall.

Thaspium, Nutt.*

aureum, Nutt.; Independence county, Coville; Call.

var. trifoliatum (Gray), C. & R.; d'Ailly.

barbinode, Nutt.

Tiedemannia, DC.

rigida (L.), Coult. & Rose, Lesquereux, Harvey
(under *Archemora*).

Pastinaca, L.

sativa, L.; Butler.

Polytænia, DC.

nuttallii, DC.; Butler; Grand Prairie, Harvey.

Bifora, Hoffm.

americana (DC.), Benth. & Hook.

Trepocarpus, Nutt.

æthusæ, Nutt.

Daucus, L.

pusillus, Michx.; Torrey & Gray, Harvey.

ARALIACEÆ.

Aralia, L.

quinquefolia (L.), Decsne. & Planch.

spinosa, L.

. CORNACEÆ.

Cornus, L.

asperifolia, Michx.; Harvey.

*Forms with wingless fruit, corresponding in general to the first two of these, and which may occur in Arkansas, are placed under *Zizia*, by Coulter & Rose, N. Am. Umbelliferæ (pp. 82 and 127).

candidissima, Marsh. (*C. stricta*, Lam.); Lesquereux.
florida, L.
sericea, L.; Lesquereux, Harvey.

Nyssa, L.

aquatica, L. (*N. sylvatica*, Marsh.) Fendler, *vide* Coulter & Evans.

(*ogeche*, Marshall (*N. capitata*, Walt.), is said by Coulter & Evans to be large-leaved forms of *N. aquatica*, so far as Arkansas specimens are concerned.)

uniflora, Wang,

CAPRIFOLIACEÆ.

Sambucus, L.

canadensis, L.

Viburnum, L.

dentatum, L.; Lesquereux.

lentago, L.; Harvey.

molle, Michx.; d'Ailly.

nudum, L.

prunifolium, L.

Triosteum, L.

angustifolium, L.; Nuttall, Harvey.

perfoliatum, L.; Lesquereux, Harvey.

Symphoricarpos, Juss.

vulgaris, Michx.

Lonicera, L.

albiflora, Torr & Gr.; Lesquereux.

flava, Sims.; Butler. There is considerable doubt as to the authenticity of Butler's plant.—Coville.

glauca, Hill; Harvey, as *L. parviflora*, Lam. This, like the preceding, is doubtful.

sempervirens, L.

RUBIACEÆ.

Cephalanthus, L.

occidentalis, L.

Oldenlandia, L.*boscii* (DC.), Chapm.; Gray, Harvey.*uniflora*, L. (*O. glomerata*, Michx.); Butler.*Houstonia*, L.*angustifolia*, Michx.*cærulea*, L.*minima*, Beck.; Nuttall.*satens*, Ell.; Harvey.*purpurea*, L.*var. calycosa* (Shuttlew), Gray; Nuttall.*var. longifolia* (Gærtn.), Gray.*Mitchella*, L.*repens*, L.*Diodia*, L.*teres*, Walt.*virginiana*, L.*Spermacoce*, L.*glabra*, Michx. (probably *S. tenuior*, L. *fide* Gray).*Galium*, L.*aparine*, L.; Butler.*arkansanum*, Gray.*circæzans*, Michx.; Nuttall, Harvey.*concinnum*, Torr. & Gr.; Gray.*latifolium*, Michx.; Lesquereux; Bradford, in low
ground, Blatchley.*pilosum*, Ait.*trifidum*, L.*triflorum*, Michx.*virgatum*, Nutt.**VALERIANACEÆ.***Valerianella*, Tourn.*longiflora* (T. & Gr.), Walp.; Harvey, Engelmann.*nuttallii* (T. & Gr.), Walp.; Nuttall, Engelmann.*radiata*, Dufr.; Butler, Harvey.

COMPOSITÆ.

Vernonia, Schreb.*arkansana*, DC.*baldwinii*, Torr.*fasciculata*, Michx.; Lesquereux, d'Ailly.*gigantea* (Walt.), (*V. altissima*, Nutt.) Torr & Gray;
Harvey.*granienifolia* (Walt.), (*V. angustifolia*, Michx.)*var. texana* (Gray); Coville.*lettermani*, Englm.*marginata* (Torr.) (*V. jamesii*, Torr. & Gr.; Nuttall).*noveboracensis* (L.), Willd.*Elephantopus*, L.*carolinianus*, Willd.*nudatus*, Gray; Harvey.*tomentosus*, L.; Nuttall, d'Ailly.*Eupatorium*, L.*ageratoides*, L. f.*album*, L.; d'Ailly, Harvey.*altissimum*, L.*cælestinum*, L.*hyssopifolium*, L.; Lesquereux.*perfoliatum*, L. Leaves in threes, Blatchley.*pupureum*, L. Near Coffeetown, Blatchley; southern
part of the state, Harvey.*rotundifolium*, L.*var. pubescens* (Muhl.; *var. ovatum*, Torr.);
d'Ailly.*semiserratum*, DC.; Gray.*serotinum*, Michx.*sessilifolium*, L.; Harvey.*Kuhnia*, L.*eupatorioides*, L.; Lesquereux, Harvey.*Liatris*.*cylindræa*, Michx.; Lesquereux.

elegans, Willd.; Lesquereux, d'Ailly.

punctata, Hook; Nuttall.

pycnostachya, Michx.; Torr. & Gr.

scariosa (L.), Willd.

spicata (L.), Willd.

squarrosa (L.), Willd.

Gutierrezia, Lag.

sphærocephala, Gray.

texana (DC.), Torr. & Gr.; Nuttall.

Amphiachyris, Nutt.

dracunculoides, Nutt.; Nuttall.

Grindelia, Willd.; Nuttall.

inuloides, Willd.; Nuttall.

lanceolata, Nutt.

Heterotheca, Cass.

subaxillaris. (Lam.); (*H. lamarckii*, Cass.)

Chrysopsis, Nutt.

graminifolia (Michx.); Nutt.; d'Ailly; Hot Springs,
Harvey.

pilosa, Nutt.

villosa, Nutt.; Butler.

var. stenophylla, Gray, Bigelow.

Aplopappus, Cass.

divaricatus (Nutt.); Gray.

Solidago, L.

bicolor, L.; Lesquereux, Harvey.

boottii, Hook.; Lesquereux.

cæsia, L.; Lesquereux, Harvey.

canadensis, L.; Lesquereux, Harvey.

caroliniana (L.); BSP. (*S. tenuifolia*, Pursh.); Lesque-
reux.

corymbosa, Ell.; Lesquereux.

drummondii, Torr. & Gr.; Lesquereux.

larceolata, L.; Lesquereux, Harvey.

leptocephala, T. & Gr.; Harvey.

missouriensis, Nutt.; Nuttall.

nemoralis, Ait.; Lesquereux, Harvey.

odora, Ait.; Lesquereux, d'Ailly.

petiolaris, Ait.; Lesquereux, Harvey.

var. angusta (T. & Gr.), Gray; Nuttall.

pilosa, Walt.; Lesquereux.

puberula, Nutt.; Butler. Not given by Gray so far west, Coville.

radula, Nutt.; Lesquereux.

rigida, L.; Lesquereux, Harvey.

rugosa, Mill.; Lesquereux, d'Ailly.

serotina, Ait.; Lesquereux, Harvey.

shortii, Torr. & Gr.; Harvey.

speciosa, Nutt.; Lesquereux, Harvey.

ulmifolia, Muhl.

Aphanostephus, DC.

skirrobasis (DC.; *A. arkansana*); Nuttall.

Bellis, Tourn.

integrifolia, Michx.

Chætopappa, DC.

asteroides, DC.

Boltonia, L'Her.

diffusa, Ell.; Harvey.

Sericocarpus, Nees.

linifolius (L.), BSP. (*S. solidagineus*, Nees.); Lesquereux.

Aster, L.

anomalus, Engelm.; Gray, Harvdy.

azureas, Lindl.; Lesquereux, Harvey.

concinus, Willd.; Harvey.

cordifolius, L.; Lesquereux, d'Ailly.

diffusus, Ait.; Harvey.

drummondii, Lindl.; d'Ailly, Harvey.

dumosus, L.

var. subulæfolius, T. & Gr.

exilis, Ell.; Nuttall.

lævis, L.; Lesquereux.

linariifolius, L.; Lesquereux, Harvey (as *l. ipioplappus*).

multiflorus, Ait.; Lesquereux, Harvey.

novæ-angliæ, L.; d'Ailly, Harvey.

oblongifolius, Nutt.

paniculatus, Lam. The plant called by Lesquereux *A. tenuifolius*, L. probably belongs here, but it may be *A. ericoides*, L.—Coville. The *A. carneus*, Nees, of Harvey probably also goes here.

patens, Ait.

ptarmicoides, T. & Gr.

var. *georgianus*, Gray; Harvey.

puniceus, L.; Lesquereux.

saggittifolius, Willd.; Lesquereux.

sericeus, Vent.; Lesquereux.

turbinellus Lindl.; Lesquereux, Harvey.

umbellatus, Mill.; southern part of state, Harvey; this is probably also the *A. amygdalinus* of Nuttall.

undulatus, L.; Lesquereux.

vimineus, Lam.; Gray. The *A. miser*, L., reported by Butler, probably goes here.

virgatus, Ell.; Harvey.

Erigeron, L.

annuus (L.), Pers.; Lesquereux, Harvey.

bellidifolius, Muhl.; Harvey.

canadensis, L.

divaricatus, Michx.

divergens, Torr. & Gr.

var. *cinerius*, Gray; Gray.

philadelphicus, L.; Butler, Harvey.

ramosus (Walt.), BSP. (*E. strigosus*, Muhl.)

var. *beyrichii* (Fish. & Mey.); Gray.

- Baccharis*, L.
salicina, Torr. & Gr.; Nuttall.
- Pluchea*, Cass.
camphorata (L.), DC.; Lesquereux, Harvey.
- Evax*, Gærtn.
prolifera, Nutt.; Nuttall.
- Antennaria*, Gærtn.
plantiginifolia (L.), Hook; Butler, Harvey.
- Gnaphalium*, L.
decurrens, Ives; Lesquereux.
obtusifolium, L. (*G. polycephalum*, Michx.); Lesquereux, Harvey.
purpureum, L.; Gray.
nightsii, Gray.; Gray, d'Ailly.
- Polymnia*, L.
canadensis, L.; Lesquereux.
var. radiata, Gray; Harvey, Coville.
vedalia, L.
- Melampodium*, L.
cinereum, DC.; Gray.
- Silphium*, L.
asperrimum, Hook.; Gray.
asteriscus, L.; Harvey.
integrifolium, Michx.
laciniatum, L.; Lesquereux, Harvey.
perfoliatum, L.; Washington county, Harvey.
scaberrimum, Ell.; Lesquereux.
terebinthinaceum, Jacq.; Lesquereux, Harvey.
trifoliatum, L.; Lesquereux.
- Berlandiera*, DC.
lyrata, Benth.; Gray.
pumila (Michx.). (*B. tomentosa*, Nutt.); Lesquereux.
var. dealbata (Torr. & Gr.); Gray.
texana, DC.; Nuttall.

Engelmannia, Torr. & Gr.*pinnatifida*, T. & Gr.; Lesquereux.*Parthenium*, L.*hysterophorus*, L. Embankment of the Iron Mountain railway, in the City of Little Rock. Introduced from farther west.—Coville.*integrifolium*, L.; Lesquereux. Eastern part of the state, Harvey.*Iva*, L.*angustifolia*, Nutt.; Nuttall.*ciliata*, Willd.; Nuttall.*Ambrosia*, L.*artemisiæfolia*, L.*bidentata*, Michx.*psilostachya*, DC.; Lesquereux.*trifida*, L.*Xanthium*, L.*strumarium*, L.; Lesquereux, Harvey.*Zinnia*, L.*pauciflora*, L.; Lesquereux.*Heliopsis*, Pers*gracilis*, Nutt.; Gray.*helianthoides* (L.), BSP. (*H. lævis*, Pers.); Lesquereux.*scabra*, Dunal.*Eclipta*, L.*alba* (L.) Hassk; d'Ailly.*Echinacea*, Moench.*angustifolia*, DC.*purpurea* (L.), Moench.*Rudbeckia*, L.*alismæfolia*, Torr. & Gr.; Gray, Harvey.*amplexicaulis*, Vahl.; Nuttall.*atrorubens*, Nutt.; Nuttall.*bicolor*, Nutt.; Nuttall.*fulgida*, Ait.; Lesquereux, Harvey.

grandiflora, Gmel.; Nuttall.

hirta, L.

laciniata, L.

maxima, Nutt.; Nuttall.

speciosa, Wender.; Gray.

subtomentosa, Pursh.

triloba, L.; Lesquereux Harvey.

Lepachys, Raf.

pinnata (Vent.), T. & Gr.; Harvey.

tagetes, Gray; Gray.

(*Tetragonotheca*, Dill.

helianthoides, L. Lesquereux was probably mistaken in this plant. It is impossible to say what the species that he places here really was.—Coville).

Helianthus, L.

angustifolius, L.; Harvey.

annuus, L.; Nuttall.

atrorubens, L.; Nuttall.

diffusus, Sims. (*H. rigidus*, Deasf.); Lesquereux, Harvey.

grosse-serratus, Martens; Nuttall.

hirsutus, Raf.

var. *trachyphyllus*, Torr. & Gr.; Gray, Harvey.

(*lætiflorus*, Pers. Lesquereux was probably mistaken in his determination of this plant.—Coville.)

mollis, Lam.; Lesquereux, Harvey.

occidentalis, Ridd.

orgylas, DC.; Nuttall.

parviflorus, Bernh.; Harvey, as *H. microcephalus*,
T. & Gr.

petiolaris, Nutt.; Nuttall.

strumosus, L.; Gray.

tracheliiifolius, Willd; Boston Mountains, Harvey.

tuberosus, L.; Gray.

Spilanthes, Jacq.*repens* (Walt.), Michx.*Actinomeris*, Nutt.*alternifolia* (L.), DC. (*A. squarrosa*, Nutt.)*Verbesina*, L.; emend.*helianthoides*, Michx.; Lesquereux, d'Ailly, Harvey.
virginica, L.*Coreopsis*, L.*aristosa*, Michx.; Butler, Harvey.*auriculata*, L.; Harvey.*discoidea*, Torr. & Gr.; Butler.*grandiflora*, Nutt.*harveyana*, Gray, Harvey, Coville.*involucrata*, Nutt.; Nuttall.*lanceolata*, L.; Lesquereux, Harvey.*palmata*, Nutt.*tinctoria*, Nutt.; Nuttall.*tripteris*, L.; Harvey.*verticillata*, L.; Lesquereux. Near Bald Knob and
Bradford.—Blatchley.*Thelesperma*, Less.*filifolium*, Gray; Gray.*Bidens*, L.*bipinnata*, L.*cernua*, L.; Lesquereux.*chrysanthemoides*, Michx.; Lesquereux, Harvey.*frondosa*, L.; Harvey.*Marshallia*, Schreb.*cæspitosa*, Nutt.; Nuttall.*trinervia* (Walt.), (*M. latifolia*, Pursh.); Lesquereux.

Not credited to Arkansas by Gray.

Homenopappus, L'Her.*corymbosus*, Torr. & Gr.; Nuttall.*tenuifolius*, Pursh; Gray.

Polypteris, Nutt.*callosa* (Nutt.), Gray; Lesquereux.*sphacelata* (Nutt.), (*P. hookeriana*, Gray); Nuttall.*Dysodia*, Cav.*chrysanthemoides*, Lag.*Hymenatherum*, Cass.*tagetoides* (T. & Gr.) Gray; Nuttall.*Helenium*, L.*autumnale*, L.*nudiflorum*, Nutt.; Lesquereux; Harvey (as *Leptopoda*
brachypoda.)*quadridentatum*, Labill.; Nuttall.*tenuifolium*, Nutt.*Gaillardia*, Foug.*lanceolata*, Michx.; Nuttall.*pinnatifida*, Torr.; Nuttall.*pulchella*, Foug.; Nuttall.*Achillea*, L.*millefolium*, L.*Anthemis*, L.*cotula*, L.*Artemesia*, L.*lewisii*, Torr. & Gr. Probably a fictitious species according to Gray, Syn. Fl., II, 417, the Arkansas specimen of Engelmann, probably *A canadensis*, but immature.*mexicana*, Willd.; Gray.*Erechtites*, Raf.*hieracifolia* (L.), Raf.; Lesquereux.*Senecio*, L.*aureus*, L.*var obovatus* (Muhl.) Torr. & Gr; Harvey.*lobatus*, Pers.; d'Ailly.*tomentosus*, Michx.; Gray, d'Ailly.

Cacalia, L.*atriplicifolia*, L.*tuberosa*, Nutt.; Lesquereux; Blatchley at Bradford.Neither species of *Cacalia* is credited by Gray to Arkansas—Coville.*Arctium*, L.*lappa*, L. (*Lappa officinalis*, All.)*Cnicus*, L.*altissimus* (L.), Willd.*var. discolor* (Muhl.), Gray; Lesquereux.*lanceolatus* (L.), Hoffm.; Harvey.*virginianus* (L.), Pursh; Lesquereux.*Centaurea*, L.*americana*, Nutt.; Nuttall.*Cichorium*, L.*intybus*, L.; Harvey.*Krigia*, Schreb.*amplexicaulis* (Michx.), Nutt.; Harvey.*dandelion* (L.), Nutt.; Nuttall, Harvey.*occidentalis*, Nutt.; Nuttall.*virginica* (L.). Willd; Harvey.*Apogon*, Ell.*humilis*, Ell.; Nuttall.*var. lyrata* (Nutt.); Harvey.*wrightii*, Gray. Collected by G. W. Letterman at Prescott, Ark.; in Harvey herbarium at Arkansas Industrial University.*Hieracium*, L.*gronovii*, L.; Nuttall.*longipilum*, Torr.*scabrum*, Michx.; Lesquereux.*venosum*, L.; Hot Springs, Harvey.*Taraxacum*, Hall.*officinale*, Web.; Lesquereux.

Fyrrhopappus, DC.

carolinianus (Walt.), DC. At Bradford by the railway—Blatchley.

Lactuca, L.

elongata, Muhl.; Lesquereux. The old *L. elongata*, Muhl., has been broken up into several species: *L. canadensis*, L., *L. integrifolia*, Bigel., *L. hirsuta*, Muhl., and *L. graminifolia*, Michx. Probably all occur in the state—Coville. *L. sanguinea* (*L. hirsuta*) occurs at Newark, on high dry ground—Blatchley.

floridana (L.), Gærtm.; Lesquereux, Harvey.

Prenanthes, L.

alba, L.; Lesquereux.

altissima, L.; Lesquereux, Harvey.

aspera, Michx.

autumnalis, Walt. (*P. virgata*, Michx); Lesquereux.

Sonchus, L.

asper, Vill.; Harvey; Walnut Ridge, Blatchley.

LOBELIACEÆ.*Lobelia*, L.

appendiculata, A. DC.; Gray, Harvey.

brevifolia, Nutt.; Engelm., *vide* Butler.

cardinalis, L.

inflata, L.

leptostachys, A. DC. In dry woods.

puberula, Michx., Butler, Harvey.

spicata, Lam.; Lesquereux, Harvey.

syphilitica, L.

CAMPANULACEÆ.*Campanula*, L.

americana, L.

Specularia, Heist.

biflora (Ruiz & Pavon), Gray; Gray.

leptocarpa (Nutt.), Gray; Gray, Harvey.

perfoliata (L.) A. DC.

VACCINIACEÆ.*Gaylussacia*, HBK.*frondosa* (L.), Torr. & Gr.; Lesquereux.*resinosa* (Ait.) Torr. & Gr.; Lesquereux.*Vaccinium*, L.*arboreum*, Marsh.*corymbosum*, L.; Lesquereux, d'Ailly.*var. fuscatum* (Ait.), Gray; Gray.*stamineum*, L.*virgatum*, Ait.*var. parviflorum*, Gray; Gray.*var. tenellum* (Ait.) Gray; Gray.**ERICACEÆ.***Gaultheria*, L.*procumbens*, L.; Lesquereux.*Leucothoe*, Don.*axillaris* (Lam.), Don.; Lesquereux. Not credited to Arkansas by Gray--Coville.*Oxydendrum*, DC.*arboreum* (L.), DC.; Lesquereux. Not credited to Arkansas by Gray--Coville.*Epigæa*, L.*repens*, L.; Lesquereux.*Andromeda*, L.*ligustrina*, Muhl. Between Batesville and Jamestown, Independence county, Coville; central part of the state, Harvey.*mariana*, L.; Gray; central part of the state, Harvey.*Kalmia*, L.*latifolia*, L.; Lesquereux.*Rhododendron*, L.*(maximum*, L.; Lesquereux. The leaves only of this were seen by Lesquereux, and the identification is probably incorrect--Coville.)

nudiflorum (L.), Torrey.

viscosum (L.), Torrey; Lesquereux, d'Ailly.

Chimaphila, Pursh.

maculata (L.), Pursh; Lesquereux.

MONOTROPEÆ.

Monotropa, L.

uniflora, L.; Harvey, Simonds.

PRIMULACEÆ.

Hottonia, L.

inflata, Ell.; Butler, d'Ailly.

Androsace, L.

occidentalis, Pursh; Harvey.

Dodecatheon, L.

media, L.; Lesquereux.

var. brevifolium, Gray. A form closely resembling the true *var. brevifolium* Gray of California; Coville

Steironema, Raf.

ciliatum (L.), Raf.; Lesquereux; southern part of the state, Harvey.

lanceolatum (Walt.), Gray.

radicans (Hook.), Gray. In a swamp at the south end of Main street, Little Rock, Coville.

Anagallis, L.

arvensis, L.; Harvey.

Centunculus, L.

minimus, L.; Nuttall.

Samolus, L.

ebracteatus, HBK.; Gray.

valerandi, L.

var. floribundus (HBK.), BSP. *var. americanus*, Gray.

SAPOTACEÆ.

Bumelia, Sw.

lycioides (L.), Pers.; Nuttall.

lanuginosa (Michx.), Pers.

EBENACEÆ.*Diospyros*, L.*virginiana*, L.**STYRACEÆ.***Symplocos*, L.*tinctoria*, (L.), L'Her.*Halesia*, Ellis.*diptera*, L.; Hot Springs, Harvey.*tetraptera*, L.; Butler. Neither species is credited to Arkansas by Gray—Coville.*Styrax*, Tourn.*americana*, Lam.; Gray. *S. grandiflora*, Ait., reported by Nuttall, probably goes here—Coville.*putverulenta*, Michx.; Little Rock, Harvey.**OLEACEÆ.***Fraxinus*, L.*americana*, L.*platycarpa*, Michx.; Harvey.*quadrangulata*, Michx.; Nuttall.*sambucifolia*, Lam.*viridis*, Michx.; f.*Forestiera*, Poir.*acuminata* (Michx.), Poir.*pubescens*, Nutt.; Nuttall.*Chionanthus*, L.*virginica*, L.; Harvey, Coville.*Osmanthus*, Lour.*(americanus* (L.), B & H. Nuttall was probably mistaken in reporting this plant from Arkansas—Coville.)**APOCYNACEÆ.***Amsonia*, Walt.*ciliata*, Walt. (*A. angustifolia*, Michx.) Hot Springs, Letterman; Harvey's herbarium.*tabernæmontana*, Walt.; Harvey, Coville.

Apocynum, L.*androsæmifolium*, L.; Harvey.*cannabinum*, L.; Lesquereux.*Trachelospermum*, Lem.*difforme*, (Walt.) Gray; Butler, Harvey.**ASCLEPIADACEÆ.***Acerates*, Ell.*longifolia*, (Michx.) Ell.*viridiflora*, (Raf.) Ell.*Asclepias*, L.*incarnata*, L.; Washington county, Harvey.*lanceolata*, Walt. (*A. paupercula*, Michx.); Lesquereux.*obtusifolia*, Michx.; Harvey.*perennis*, Walt.*purpurascens*, L.; Harvey.*quadrifolia*, L.*speciosa*, Torr.; Gray.*stenophylla*, Gray; Gray.*tuberosa*, L.*variegata*, L.*verticillata*, L.*Asclepiodora*, Gray.*decumbens* (Nutt.), Gray; Gray.*viridis* (Walt.), Gray; Nuttall.*Enslenia*, Nutt.*albida*, Nutt.; Lesquereux.*Gonolobus*, Michx.*baldwinianus*, Sweet; Engelmann, Harvey.*biflorus*, Nutt.; Nuttall.*carolinensis* (Jacq.), R. Br.; Gray.*cynanchoides*, Engelm.; Gray.*lævis*, Michx.,*var. macrophyllus* (Michx.), Gray; Lesquereux.

LOGANIACEÆ.*Gelsemium*, Juss.*sempervirens* (L.), Ait.; Lesquereux, d'Ailly.*Spigelia*, L.*marilandica*, L.*Mitreola*, L.*petiolata* (Walt.), Torr. & Gr; Harvey; Hot Springs,
Letterman*Polypleurum*, L.*procumbens*, L.**GENTIANACEÆ.***Erythræa*, Rich.*beyrichii*, Torr. & Gr.; Beyrich, Marcy.*Sabbatia*, Adans.*angularis* (L.), Pursh.*campestris*, Nutt.; Nuttall,*dichotoma* (Walt.), (*S. calycosa*, Pursh); Harvey.*Gentiana*, L.*andrewsii*, Griseb.; Lesquereux.*puberula*, Michx.; Lesquereux, Harvey.*saponaria*, L.*villosa*, L. (*G. ochroleuca*, Froel.); Lesquereux.*Frasera*, Walt.*carolinensis*, Walt.; d'Ailly.*Limnanthemum*, Gmel.*lacunosum* (Vent.), Griseb.; Lesquereux.**POLEMONIACEÆ.***Phlox*, L.*amæna*, Sims.; Harvey.*divaricata*, L.; Gray, Harvey.*glaberrima*, L.*maculata*, L.*paniculata*, L.*pilosa*, L.*reptans*, Michx.; Nuttall.

Gilia, Ruiz & Pav.

coronopifolia, Pers.; Nuttall.

Polemonium, L.

reptans, L.

HYDROPHYLLACEÆ.

Hydrophyllum, L.

virginianum, L.

Nemophila, Nutt.

microcalyx (Nutt.), Fisch. & Mey.; Nuttall.

Ellisia, L.

nyctelea, L.

Phacelia, Juss.

glabra, Nutt.; Nuttall.

dubia (L.), (*P. parviflora*, Pursh); Harvey.

var. hirsuta (Nutt.); Lesquereux, Harvey.

patuliflora (Engelm. & Gr.), Gray; Harvey; at Prescott, Letterman.

purshii, Buckl.; Lesquereux.

Hydrolea, L.

affinis, Gray. Southwestern part of the state, Harvey.

ovata, Nutt.

BORRAGINACEÆ.

Heliotropium, L.

convolvulaceum (Nutt.), Gray.

curassavicum, L.; Coville.

indicum, L.

tenellum (Nutt.), Torr.; Nuttall.

Cynoglossum, L.

officinale, L.

virginicum, L.

Echinosperrum, Sev.

lappula (L.), Lehm.; Lesquereux, Call.

virginianum (L.), Lehm.

Mertensia, Roth.

virginianum (L.), DC.; Lesquereux.

Myosotis, L.*virginica* (L.) BSP. (*M. verna*, Nutt.)*Onosmodium*, Michx.*carolinianum* (Lam.), DC.; Butler, Harvey.*virginianum* (L.), DC.; Lesquereux, Harvey.*Lithospermum*, L.*angustifolium*, Michx.; Nuttall, Butler.*arvense*, L.*canescens* (Michx.), Lehm.*carolinense* (Gmel.), Lehm. (*L. hirtum*, Lehm.)**CONVOLVULACEÆ.***Ipomœa*, L.*hederacea* (L.), Jacq.; Harvey.*lacunosa*, L.*pandurata* (L.), Meyer; Harvey.*purpurea* (L.), Lam. All the species of *Ipomœa* were reported by Nuttall, according to Lesquereux, Coville.*Jacquemontia*, Choisy.*tamniifolia* (L.), Griseb.*Convolvulus*, L.*arvensis*, L.*incanus*, Vahl.; Nuttall.*Evolvulus*, L.*argenteus*, Pursh; Nuttall.*Dichondra*, Forst.*repens*, Forst.; Nuttall.*Cuscuta*, L.*arvensis*, Beyrich; Harvey.*compacta*, Juss.; Harvey; Hot Springs, Letterman.*coryli*, Engelm. (*C. inflexa*, Engelm.); Butler.*glomerata*, Choisy; Lesquereux, Call.*gronovii*, Willd.; Nuttall,*polygonorum*, Engelm. (*C. chlorocarpa*, Engelm.); Gray,
Harvey.

SOLANACEÆ.*Solanum*, L.*carolinense*, L.*nigrum*, L.*rostratum*, Dun. This has been noted only along railways.*Physalis*, L.*æquata*, Jacq., f.; Harvey.*angulata*, L.; Walnut Ridge, Blatchley.*lanceolata*, Michx.*var. longifolia* (Nutt.; *var lævigata*, Gray); Nuttall.*mollis*, Nutt.; Nuttall, Harvey.*obscura*, Michx.; Harvey.*philadelphica*, Lam.; Lesquereux.*pubescens*, L.; Coville.*virginiana*, Mill. (*P. viscosa*, Gray, not L.); Lesquereux.*Datura*, L.*stramonium*, L.*tatula*, L.; Harvey.**SCROPHULARIACEÆ.***Verbascum*, L.*blattaria*, L.*thapsus*, L.*Linaria*, Juss.*canadensis* (L.), Dumont.*Scrophularia*, L.*nodosa*, L.*var. marilandica* (L.), Gray.*Chelone*, L.*glabra*, L.; Lesquereux.*Pentstemon*, Mitch.*cobæa*, Nutt.; Nuttall.*hirsutus* (L.), Willd. (*P. pubescens*, Sol.)

lævigatus, Sol.

var. digitalis (Nutt.), Gray.

tubiflorus, Nutt.

Collinsia, Nutt.

verna, Nutt.; Butler.

violacea, Nutt.; Nuttall, Pitcher.

Mimulus, L.

alatus, Soland.

Conobea, Aubl.

multifida (Michx.), Benth.

Herpestis, Gærtn., f.

acuminata (Walt.) (*H. nigrescens*, Benth.)

monniera (L.), HBK.; Nuttall.

rotundifolia (Michx.), Pursh; Lesquereux, Harvey.

Gratiola, L.

drummondii, Benth.; Gray.

pilosa, Michx.

pusilla, Torr.; Gray.

sphærocarpa, Ell.; Butler, Harvey.

virginiana, L.

Ilysanthes, Raf.

gratioloides (L.), Benth.

Veronica, L.

americana, Schwein.; Lesquereux.

peregrina, L.

virginica, L.

Buchnera, L.

americana, L.

Seymeria, Pursh.

macrophylla, Nutt.

Gerardia, L.

aspera, Dougl.; Lesquereux, Gray.

auriculata, Michx.

flava, L.; Lesquereux.

grandiflora, Benth.; Washington county, Harvey.

heterophylla, Nutt.; Nuttall, Harvey.

lævigata, Raf.; Lesquereux.

pedicularia, L.; Nuttall, d'Ailly.

var. *pectinata*, Nutt.; Gray, Harvey.

purpurea, L.

var. *fasciculata* (Ell.), Chapm.; Gray.

setacea, Walt. var. *longifolia* (Nutt.), Gray; Nuttall.

tenuifolia, Vahl.; Butler, Harvey.

var. *macrophylla*, Benth.; Harvey.

virginica (L.), BSP.? (*G. quercifolia*, Pursh.)

Castilleia, L.; f.

coccinea (L.), Spreng.; Lesquereux, Harvey.

purpurea (Nutt.) Don.; Nuttall.

Pedicularis, L.

canadensis, L.

Melampyrum, L.

lineare, Lam. (*M. americanum*, Michx.); Nuttall.

OROBANCHACEÆ.

Aphyllon, Mitch.

uniflorum (L.), Gray.

LENTIBULARIACEÆ.

Utricularia, L.

vulgaris, L.; Nuttall.

BIGNONIACEÆ.

Bignonia, Tourn.

capreolata, L.; Lesquereux, Coville.

Catalpa, Juss.

(*bignonioides*, Walt. Reported by Lesquereux as apparently indigenous in the extreme north-western part of the state,⁶ in Benton county. Professor Harvey supposes, with good reason, that this is *C. speciosa*, which was not specifically separated from *C. bignonioides* at the time of Lesquereux's trip—Coville.)

speciosa, Warder. Reported by Professor Harvey as spontaneous (but probably naturalized) about the town of Washington—Coville.

Tecoma, Juss.

radicans (L.), Juss.

PEDALIACEÆ.

Martynia, L.

proboscidea, Glox. Head of Oil Trough bottoms, low ground near river, Blatchley.

ACANTHACEÆ.

Ruellia, L.

ciliosa, Pursh. *var. humilis* (Nutt.), (*var. longifolia*, Gray); Nuttall.

pedunculata, Torr.

strepens, L.

Dianthera, L.

americana, L.

ovata (Walt.), (*D. humilis*, Engelm. & Gr.); Harvey.

Dicliptera, Juss.

brachiata, Spreng.

var. attenuata, Gray; Nuttall.

VERBENACEÆ.

Phryma, L.

leptostachya, L.

Lippia, L.

lanceolata, Michx.

nodiflora (L.), Michx. Waste places about Little Rock, Coville.

Verbena, L.

angustifolia, Michx. (*V. rugosa*, Willd.; Nuttall.)

aubletia, L.

bipinnatifida, Nutt.; Gray, Harvey.

bracteosa, Michx.

hastata, L.

stricta, Vent.

urticæfolia, L.

Callicarpa, L.

americana, L.

LABIATÆ.

Mentha, L.

canadensis, L.

piperita, L.; Harvey.

viridis, L.; Lesquereux, Blatchley.

Tycopus, L.

rubellus, Mœnch.; Gray, Harvey.

sinuatus, Ell.

virginicus, L.; Nuttall, d'Ailly.

Cunila, L.

mariana, L.

Pycnanthemum, Michx.

albescens, Torr. & Gr.; Harvey.

clinopodioides, Gray; Lesquereux. Far out of range
and doubtful—Coville.

flexuosum (Walt.), BSP. (*P. linifolium*, Pursh.)

incanum (L.), Michx.

muticum (Michx.), Pers.

var. pilosum (Nutt.), Gray.

virginicum (L. Pers.); (*P. lanceolatum*, Pursh); Les-
quereux.

Origanum, L.

vulgare, L.; Nuttall, d'Ailly.

Hedeoma, Pers.

acinoides, Scheele; Leavenworth.

hispida, Pursh; Gray.

pulegioides (L.), Pers.

Calamintha, Mœnch.

clinopodium, Benth.; Nuttall.

nepeta (L.), Link.; Gray.

glabra (Nutt.) (*C. nuttallii*, Benth.); Nuttall.

Melissa, L.*officinalis*, L.*Salvia*, L.*azurea*, Lam.*var. longifolia* (Nutt.), (*var. grandiflora*, Benth.);
Nuttall, Harvey.*lyrata*, L.*verbenacea*, L.; Nuttall.*Monarda*, L.*bradburiana*, Beck.; Lesquereux, Harvey.*citriodora*, Cerv.*fistulosa*, L.*var. mollis* (L.), Benth.; Harvey.*punctata*, L.*russelliana*, Nutt.; Nuttall, Harvey.*Blephilia*, Raf.*ciliata* (L.), Raf.*Lophanthus*, Benth.*nepetoides* (L.), Benth.*scrophulariæfolius* (Willd.), Benth.; Nuttall.*Nepeta*, L.*cataria*, L.*hederacea* (L.), BSP.; Lesquereux, Harvey.*Scutellaria*, L.*canescens*, Nutt.*cardiophylla*, Engelm. & Gr.; Gray; Hot Springs,
Harvey.*integrifolia*, L.; d'Ailly, Harvey.*lateriflora*, L.*nervosa*, Pursh; Lesquereux.*parvula*, Michx.*resinosa*, Torr.; Lesquereux; Newark, Blatchley.*versicolor*, Nutt.*Brunella*, L.*vulgaris*, L.

Physostegia, Benth.*intermedia* (Nutt.), Gray; Gray.*virginiana* (L.), Benth.; Lesquereux, Harvey.*Marrubium*, L.*vulgare*, L.; Nuttall, Harvey.*Stachys*, L.*aspera*, Michx.; Harvey, Coville.*hyssopifolia*, Michx.; Nuttall.*Leonurus*, L.*cardiaca*, L.; Butler.*Lamium*, L.*amplexicaule*, L.; Nuttall. Cultivated ground, Harvey.*Trichostema*, L.*dichotomum*, L.; Lesquereux.*lineare*, Nutt.; Nuttall.*Isanthus*, Michx.*brachiatus* (L.), BSP. (*I. cæruleus*, Michx.); Lesquereux, Harvey.*Teucrium*, L.*canadense*, L.**PLANTAGINACEÆ.***Plantago*, L.*elongata*, Pursh. (*P. pusilla*, Nutt.)*heterophylla*, Nutt.; Nuttall.*lanceolata*, L.; d'Ailly.*major*, L.; Nuttall, Lesquereux.*patagonica*, Jacq. Abundant at Gainesville and Forrest City—Call.*var. aristata* (Michx.), Gray; Nuttall, Harvey.*var. gnaphaloides* (Nutt.), Gray; Nuttall, Butler.*var. spinulosa* (Decsne.), Gray; d'Ailly.*rugelii*; Decsne.; Harvey.*sparsiflora*, Michx.; Harvey.*virginica*, L.*var. longifolia*, Gray; Nuttall; Walnut Ridge, Blatchley.

NYCTAGINACEÆ.*Oxybaphus*, Vahl.*albidus* (Walt.), Sweet; Lesquereux, Harvey.*angustifolius*, Sweet; Nuttall.*nyctagineus* (Michx.), Sweet; Nuttall.**ILLECEBRACEÆ.***Paronychia*, Tourn.*dichotoma* (L.). Nutt.**AMARANTACEÆ.***Amarantus*, L.*albus*, L.; Nuttall, Coville.*chlorostachys*, Willd.; Butler.*hybridus*, L.*spinosus*, L.*Acnida*, L.*tuberculata*, Moq. (*A. tamariscina*.); Nuttall, Coville.*Cladothrix*, Nutt.*lanuginosa*, Nutt.; Nuttall.*Alternanthera*, Forsk.*achyrantha* (L.), R. Br.; Nuttall.*Frælichia*, Mœench.*floridana* (Nutt.), Moq.; Nuttall, Coville.*Iresine*, L.*celosioides*, L.**CHENOPODIACEAÆ.***Cycloloma*, Moq.*platyphyllum* (Michx.), Moq.*Chenopodium*, L.*album*, L.; Lesquereux, Harvey.*ambrosioides*, L. The *var. anthelminticum* differs from the species by such inconstant characters that I could not be sure under which form my own specimens belong—Coville.

boscianum, Moq.; Harvey.

hybridum, L.; Nuttall.

murale, L. Little Rock, along the Iron Mountain railway—Coville.

Atriplex, L.

(*hortensis*, L. Reported by Nuttall as introduced, but apparently not naturalized, and therefore to be excluded from the list proper—Coville)

Corispermum, L.

hyssoifolium, L.; Nuttall.

PHYTOLACCACEÆ.

Rivina, L.

lævis, L.; Nuttall.

Phytolacca, L.

decandra, L.

POLYGONACEÆ.

Eriogonum, L.

annuum, Nutt.; Nuttall.

longifolium, Nutt.

Polygonella, Michx.

ericoides, Gray. Garland county, Letterman; in Harvey herbarium, Arkansas Industrial University—Simonds.

Polygonum, L.

acre, HBK.; Harvey.

amphibium, L; Lesquereux. This species has been divided since Lesquereux's list came out, and his specimens may not belong to the true *P. amphibium*—Coville.

articulatum, L.; Nuttall.

aviculare, L.

convolvulus, L.; Nuttall.

dumetorum, L; Lesquereux, Harvey.

var. scandens (L.), Gray; Harvey.

erectum, L.; Nuttall, Harvey.

hirsutum, Walt.; Nuttall.

hydropiperoides, Michx.

incarnatum, Ell.; Butler, Harvey.

meisnerianum, Cham. & Schl. Gravelly bank of
White River near a ford, about one mile
above Batesville—Coville.

muhlenbergii (Meisn.), S. Watson (*P. amphibium*, L.)
var. terrestre (Willd.); Harvey.

persicaria, L. Little Rock, as a weed—Coville.

sagittatum, L.; Lesquereux.

setaceum, Baldwin. Near Argenta. This species
does not appear to be clearly different from
P. hydropiperoides—Coville.

tenue, Michx.; Nuttall, Coville.

virginianum, L.

Rumex, L.

acetosella, L.

crispus, L.; Lesquereux; Walnut Ridge, Blatchley.

hastatulus, Baldw.; Butler.

maritimus, L.; Nuttall, Coville.

verticillatus, L.; Nuttall; southern part of State,
Harvey.

Brunnichia, Banks.

cirrhusa, Banks.

ARISTOLOCHIACEÆ.

Asarum, L.

canadense, L.

Aristolochia, L.

serpentaria, L.; Lesquereux.

tomentosa, Sims.

PIPERACEÆ.

Saururus, L.

cernuus, L.

LAURACEÆ.

Persea, Gærtn.

carolinensis (Michx.), Nees; Harvey.

Sassafras, Nees.

officinale, Nees.

Lindera, Thunb.

benzoin (L.), Meisn.

THYMELEACEÆ,

Dirca, L.

palustris, L.

LORANTHACEÆ.

Phoradendron, Nutt.

flavescens (Pursh), Nutt.

SANTALACEÆ.

Pyrularia, Michx.

pubera, Michx.; Nuttall.

Comandra, Nutt.

umbellata (L.), Nutt.; Nuttall, Harvey.

EUPHORBIACEÆ.

Euphorbia, L.

cordifolia, Ell. Waste grounds near the Union Depot,
Little Rock—Coville.

corollata, L.

dentata, Michx.; Nuttall, Harvey.

heterophylla, L. Nuttall, Harvey; Hot Springs, Letterman.

var. graminifolia (Michx.), Engelm.; Nuttall.

hexagona, Nutt.; Nuttall.

hypericifolia, L. It is probable that this is the plant
now passing under the name of *E. preslii*,
Guss.—Coville.

longicruris, Scheele; Nuttall.

maculata, L.

obtusata, Pursh; Nuttall, Harvey.

petaloidea, Engelm.; Nuttall.

Phyllanthus, L.

carolinensis, Walt.

Jatropha, L.*stimulosa*, Michx.; Nuttall, Harvey.*urens*, L.*Croton*, L.*capitatus*, Michx.*glandulosus*, L.*linearis*, Jacq.; Hempstead county, Harvey.*monanthogynus*, Michx.*Crotonopsis*, Michx.*linearis*, Michx.*Argythamnia*, P. Browne.*mercurialina*, Muell.*Acalypha*, L.*caroliniana*, Walt. In a cultivated field in the valley of the White River near Batesville.—Coville.*virginica*, L.*var. gracilens* (Gray), Muell.*Tragia*, Plum.*macrocarpa*, Willd.; Harvey; Hot Springs, Letterman.*netetæfolia*, Cav. (*T. urticæfolia*, Michx.)*Stillingia*, Gard.*sylvatica*, L.**URTICACEÆ.***Ulmus*, L.*alata*, Michx.*americana*, L.*crassifolia*, Nutt.*fulva*, Michx.*Planera*, Gmel.*aquatica* (Walt.), Gmel.; Harvey, Letterman.*Celtis*, L.*mississippiensis*, Bosc.*occidentalis*, L.*var. pumila* (Pursh), Gray; Gray.

- Humulus*, L.
lupulus, L.
- Cannabis*, L.
sativa, L.; Lesquereux.
- Ioxylon*, Raf.
pomiferum, Raf. (*Maclura aurantiaca*, Nutt.)
- Morus*, L.
rubra, L.
- Urtica*, L.
chamædryoides, Pursh; Nuttall, Harvey.
gracilis, Ait.; Nuttall.
urens, L.; Nuttall.
- Laportea*, Gaudich.
canadensis (L.), Gaud.
- Bæhmeria*, Jacq.
cylindrica (L.), Willd.
- Parietaria*, L.
pennsylvanica, Muhl.

PLATANACEÆ.

- Platanus*, L.
occidentalis, L.

JUGLANDACEÆ.

- Hicoria*, Raf. (*Carya*, Nutt.)
alba (L.), Britt. (*C. tomentosa*, Nutt.)
aquatica (Michx. f.) Britt. (*C. aquatica*, Nutt.)
glabra (Mill.) Britt. (*C. porcina*, Nutt.)
minima (Marsh.), Britt. (*C. amara*, Nutt.)
myristicæformis (Michx. f.) Britt.; Harvey.
ovata (Mill.), Britt. (*C. alba*, Nutt.)
pecan (Marsh.) Britt. (*C. olivæformis*, Nutt.)
sulcata (Willd.), Britt.; Lesquereux, Harvey.
- Juglans*, L.
cinerea, L.
nigra, L.

MYRICACEÆ.*Myrica*, L.*cerifera*, L.**CUPULIFERÆ.***Betula*, L.

nigra, L.; Coville, Blatchley, Harvey, Simonds, etc. Nuttall reported a birch under the name of *B. populifolia*. It seems quite unlikely that the *B. populifolia* of Aiton occurs in Arkansas; and although *B. nigra* was at that time separated from the above species, I must believe that Nuttall meant *B. nigra*, as now understood, for he does not otherwise mention it—Coville.

Alnus, Gærtn.*serulata*, Willd.*Carpinus*, L.*caroliniana*, Walt. (*C. americana*.)*Ostrya*, Scop.*virginiana* (Mill.), Willd.*Corylus*, L.*americana*, Walt.*Quercus*, L.*alba*, L.*aquatica*, Walt.*bicolor*, Willd.*coccinea*, Wang.*falcata*, Michx.*imbricaria*, Michx.*lyrata*, Walt.*macrocarpa*, Michx.*michauxii*, Nutt.*muhlenbergii*, Engelm.; Harvey, Call.*nigra*, L.; Nuttall.

pinus L. Reported by Nuttall and Lesquereux under the name of *O. montana*, Willd—Coville.

rubra, L.

tinctoria, Bartr.

Castanea, Gært. n.

(*vesca*, L., reported by Lesquereux, appears to have been *C. pumila*.)

pumila, Mill.

Fagus, L.

ferruginea, Ait.

SALICACEÆ.

Salix, L.

discolor, Muhl.; Lesquereux.

humilis, Muhl. This is the *S. conifera* of Nuttall's Flora of Arkansas—Coville.

longifolia, Muhl; Nuttall.

nigra, Marsh.

Populus, L.

heterophylla, L.; Harvey.

monilifera, Ait.

CERATOPHYLLACEÆ.

Ceratophyllum, L.

demersum, L.; Nuttall, Lesquereux.

HYDROCHARIDACEÆ.

Elodea, Michx.

canadensis, Michx. f. (*Anarcharis canadensis*, Planch.); Nuttall, Lesquereux.

Vallisneria,* L.

spiralis, L.; Nuttall.

Limnobium, Rich.

spongia, Rich.; Lesquereux.

ORCHIDACEÆ.

Microstylis, Nutt.

unifolia (Michx.), BSP. (*M. ophioglossoides*, Nutt.)

Aplectram, Nutt.*spicatum* (Walt.), BSP. (*A. hiemale*, Nutt.); Nuttall.*Corallorhiza*, R. Br.*odontorhiza* (Sw.), Nutt.; Bütler, Harvey.*Tipularis*, Nutt.*unifolia* (Muhl.), BSP. (*T. discolor*, Nutt.); Nuttall, Harvey.*Hexalectris*, Raf.*aphyllas* (Nutt.) Raf.; Nuttall, Harvey, Blatchley.*Spiranthes*, Rich.*cernua* (L. Rich.—“*S. annua*, Rich.” in Lesquereux’s list is probably a misprint; Coville).*gracilis*, Bigel.; Harvey.*præcox* (Walt.), S. Watson. (*S. graminea*, var. *walteri*, Gray.) Grand Prairie, Harvey.*Calopogon*, R. Br.*tuberosus* (L.), BSP. (*C. pulchellus*, R. Br.); Nuttall, d’Ailly.*Pogonia*, Juss.*trianthophorus* (Sw.), BSP. (*P. pendula*, Lindl.)*Orchis*, L.*spectabilis*, L.; Nuttall.*Habenaria*, Willd.*ciliaris* (L.), R. Br. Harvey herbarium at Arkansas Industrial University; Hot Springs, Letterman; Independence county, near W. B. Frazer’s, Coville; near Malvern, Hot Spring county, also in Saline county, d’Ailly; Bradford, second bottoms, Blatchley.*flava* (L.), Gray. (*H. virescens*, Spreng.); Nuttall.*lacera* (Michx.), R. Br.; Harvey.*leucophæa* (Nutt.), Gray; Nuttall.*nivea*, Spreng.; Harvey.*peramæna*, Gray. Bradford and Newark, Blatchley.*psycodes* (L.), Gray; Nuttall.

tridentata (Willd.), Hook. In a sandy swamp at the south end of Main st., Little Rock, Coville.

Cypripedium, L.

parviflorum, Salisb.; Harvey, Blatchley.

ZINGIBERACEÆ.

Thalia, L.

dealbata, Rosc.; Nuttall.

BROMELIACEÆ.

Tillandsia, L.

usneoides, L.; Nuttall. A specimen in the Harvey herbarium at Fayetteville, is labeled "S. E. Arkansas."

HÆMODORACEÆ.

Aletris, L.

farinosa, L.; Harvey.

IRIDACEÆ.

Belamcanda, Adans.

chinensis (L.), Adans. Wild in the streets of Black Rock., St. Lawrence county, Blatchley.

Iris, L.

fulva, Ker. (*I. cuprea*, Pursh.

verna, L.; d'Ailly.

versicolor, L.; Walnut Ridge; Newark, Blatchley.

Sisyrinchium, L.

angustifolium, Mill. (*S. bermudiana*, Gray.) Blatchley, d'Ailly.

mucronatum, Michx.; Harvey, Simonds.

AMARYLLIDACEÆ.

Hypoxis, L.

erecta, L.

Crinum, L.

americanum, L.; Nuttall.

Hymenocallis, Salisb.

occidentalis, Kunth. From Independence county southward. The western plant (not reported as occurring west of the Mississippi) is said to be "apparently distinct from *H. lacera*, Salisb. (*Panocratium rotatum*, Ker.), of the southern coast."—Watson in Gray's Man., 6th Ed.

Agave, L.

virginica, L.

DIOSCOREACEÆ.

Dioscorea, L.

villosa, L.

LILIACEÆ.

Smilax, L.

bona-nox, L.; Nuttall, Coville; Blatchley and Harvey, as *S. tamnoides*, L.

glauca, Walt.

herbacea, L.

lanceolata, L.

laurifolia, L.; Lesquereux, d'Ailly.

rotundifolia, L.

Polygonatum, Adans.

biflorum (Walt.), Ell.; Nuttall.

commutatum (Schult.), Dietr. (*P. giganteum*, Dietr.)

Unifolium, Adans.

racemosum (L.), Britt. (*Smilacina*, Desf.)

stellatum (L.), Greene (*Smilacina*, Desf.); Nuttall.

Yucca, L.

glauca, Nutt., Fraser's Cat. (*Y. angustifolia*, Pursh);

var. mollis, Engelm. This is probably the plant reported as "*Y. recurvifolia*?" by Nuttall—Coville.

Nothoscordum, Kunth.

striatum (Jacq.), Kunth; Nuttall, Lesquereux; d'Ailly, Harvey (as *Allium*.)

Allium, L.*canadense*, L.*mutabile*, Michx.; Butler, d'Ailly.

(The plant reported by Lesquereux as *Allium stellatum*, Nutt., and that by Nuttall as *A. angulosum*, var. *leucorhizum*, cannot be located with certainty—Coville.)

Camassia, Lindl.*fraseri*, Torr.

var. *angusta*, Torr., Watson, Proc., Amer. Acad., XIV.

Lilium, L.*philadelphicum*, L.

superbum, L. var. *carolinianum* (Michx.), Chapm.; Nuttall.

Erythronium, L.*albidum*, Nutt.; Nuttall, Harvey.*americanum*, Ker.*Chamælirium*, Willd.

luteum (L.), Gray (*C. carolinianum*, Willd.); Letterman in Harvey herbarium; Watson.

Tofieldia, Huds.*glabra*, Nutt.; Nuttall, Lesquereux.*Uvularia*, L.*grandiflora*, Smith; Butler.*Oakesia*, S. Wats.*sessilifolia* (L.), S. Wats. (*Uvularia*, L.); Nuttall.*Medeola*, L.*virginiana*, L.; Nuttall.*Trillium*, L.*sessile*, L.; Nuttall.

var. *viridescens* (Nutt.) var. *nuttallii*, S. Wats.; Nuttall, Harvey.

unguiculatum, Nutt. (*T. recurvatum*, Beck.)*Melanthium*, L.

virginicum, L.

Stenanthium.

angustifolium (Prush), Gray; Nuttall.

Amianthium, Gray.

muscætoxicum (Walt.), Gray; Nuttall, Harvey.

PONTEDERIACEÆ.

Pontederia, L.

cordata, L.

Heteranthera, Ruiz & Pav.

limosa, Vahl.; Nuttall.

graminea (Michx.), Vahl. (*Schollera*, Willd.)

XYRIDACEÆ.

Xyris, L.

caroliniana, Walt.; d'Ailly.

torta, Smith; Harvey.

COMMELINACEÆ,

Commelina, L.

hirtella, Vahl. (*C. erecta*, Gray).

virginica, L.

Tradescantia, L.

rosea, Vent.; Nuttall.

virginica, L.

JUNCACEÆ.

Juncus, L.

acuminatus, Michx.; Nuttall, Harvey.

var. debilis (Gray), Engelm. Near Argenta, Co-ville.

var. diffusissimus (Buchl.), Engelm.; Harvey.

bufonius, L.; Nuttall.

canadensis, J. Gay; Butler.

effusus, L.

filipendulus, Buchl. (*J. leptocaulis*, Torr. & Gr.); Leavenworth, *fide* Engelmann.

marginatus, Rostk.; Nuttall, Harvey.

nodosus, L. *var. texanus*, Engelm. Sandy flood plain of the Arkansas River, near Little Rock.—Coville.

repens, Michx.; Nuttall, Harvey.

scirpoides, Lam.; Engelmann, Harvey.

var. polycephalus (Ell.), Engelm.; Engelmann.

setaceus, Rostk.

tenuis, Willd.

Luzula, DC.

campestris (L.), DC.

PALMÆ.

Sabal, Adans.

adansonii, Guerns. The most northern station observed is near Pine Bluff, Jefferson county. It is common in the bottoms and wet flood plains in all the counties south of that.

TYPHACEÆ.

Typha, L.

latifolia, L.

Sparganium, L.

androcladum (Engelm.) Morong. In a cypress swamp near Argenta. Determined by Mr. Morong.—Coville.

(*simplex*, Huds.; Lesquereux. The precise place of this plant, under the present arrangement of the genus, cannot be made out without specimens.—Coville.)

ARACEÆ.

Arisæma, Mart.

dracontium (L.), Schott.

triphyllum (L.), Torr.

Peltandra, Raf.

virginica (L.), Raf.; Harvey.

Acorus,[†]L.

calamus, L.

LEMNACEÆ.*Lemna*, L.*minor*, L.; Nuttall, Lesquereux.*trisulca*, L.; Lesquereux.*Spirodela*, Schleid.*polyrrhiza* (L.), Schleid. (*Lemna*, L.); Nuttall, Coville.**ALISMACEÆ***Alisma*, L.*plantago*, L. *var. triviale* (Pursh). BSP. (*var. americanum*, Gray.)*Sagittaria*, L.*graminea*, Michx.; Nuttall, Harvey.*variabilis*, Engelm.; Nuttall, Harvey. The varieties are not given—Coville.*Echinodorus*, Rich.*radicans* (Nutt.), Engelm.; Nuttall, Harvey.*rostratus* (Nutt.), Engelm.; Nuttall.**NAIADACEÆ.***Potamogeton*, L.*amplifolius*, Tuck. Power's Creek, about twelve miles southwest of Batesville, Coville.*gramineus*, L.; Nuttall.*hybridus*, Michx. Polk bayou, about half a mile from Batesville, Coville.*natans*, L.*prælongus*, Wulf.; Lesquereux.*zosteræfolius*, Schum.; Lesquereux.**CYPERACEÆ.***Cyperus*, L.*acuminatus*, Torr. & Hook. Southeastern part of the state, Harvey.*aristatus*, Rottb. (*C. inflexus*, Muhl.) Southeastern part of the state, Harvey.*baldwinnii*, Torr. Reported by Nuttall, under the name of *Mariscus echinatus*, Coville.

cyrtolepsis, Torr. & Hook. Eastern part of the state,
Harvey.

diandrus, Torr.; Lesquereux, Harvey.

erythrorhizos, Muhl. Southern part of state, Harvey.

esculentus, L.

filiculmis, Vahl.; Harvey.

flavescens, L.

luzula, Rottb. *var. umbellulatus*, Britt. (*C. vegetus*,
Pursh); Harvey, Britton.

nuttallii, Eddy.; Nuttall.

ovularis (Vahl.), Torrey.

refractus, Engelm. Independence county, Coville;
southeast Arkansas, Harvey.

retrofractus, Gray; Nuttall.

rotundus, L.; Nuttall.

stenolepis, Torr.; d'Ailly.

strigosus, L.; Lesquereux, d'Ailly, Harvey. Nuttall's
C. flavicomus probably goes here, Coville.

uniflorus, Torr. & Hook. Embankment of the Iron
Mountain railway near Argenta, Coville.

virens, Michx.; Harvey.

Kyllinga, Rottb.

pumila, Michx.

Dulichium, Pers.

spathaceum (L.), Pers.; Little Rock, Harvey.

Eleocharis, R. Br.

acicularis, (L.), R. Br.; Nuttall, Lesquereux.

ovata, (Roth.) R. Br. (*E. obtusa*, Schultes); Harvey.

A form belonging to this species or its *var.*
engelmanni (Steud.) Britt., occurs on the
bank of the Arkansas, near Little Rock.—
Coville.

palustris (L.), R. Br.; Nuttall, Harvey.

pygmæa, Torr.; Nuttall.

quadrangulata (Michx.), R. Br.; Nuttall, Coville.

tenuis (Willd.), Schult.; Harvey.

tuberculosa (Michx.), R. Br.; d'Ailly.

Fimbristylis, Vahl.

autumnalis (L.), Roem. & Schult.

capillaris (L.), Gray.

castanea, Vahl.; Harvey.

laxa, Vahl.

vahliae (Lam.), Link. (*F. congesta*, Torr.) On the sandy bars of the Arkansas river near Little Rock, Coville.

Scirpus, L.

atrovirens, Muhl.; Harvey.

carinatus (Hook & Arn.), Gray; Harvey.

lacustris, L.; Nuttall.

lineatus, Michx.; Harvey.

olneyi, Gray. Salado creek, Independence county, Coville.

pungens, Vahl.; Lesquereux, Harvey.

Eriophorum, L.

cyperinum, L. (*Scirpus eriophorum* Michx.) Southern part of the state, Harvey.

Fuirena, Rottb.

squarrosa, Michx.; Nuttall, Lesquereux.

Hemicarpha, Nees.

micrantha (Vahl.), Britt. (*H. subsquarrosa*, Nees.)

Rynchospora, Vahl.

alba (L.), Vahl.; Nuttall.

axillaris (Lam.), Britt. (*R. cephalantha*, Gray); Harvey.

glomerata (L.), Vahl.; Harvey.

harveyi, Bott.; Harvey.

inexpansa (Michx.), Vahl. Southern part of the state, Harvey.

laxa, Vahl. (*R. longirostris*, Michx., Ell.); Nuttall.

R. macrostachya, Torr. of Arkansas is probably the same.

Cladium, P. Br.*effusum*, Torr.; Nuttall.*Scleria*, Berg.*reticularis* Michx.; Nuttall.*triglomerata*, Michx.; Harvey.*Carex*, L.*cephalophora*, Muhl.; Harvey.*crinita*, Lam.; Butler.*echinata*, Murr. (*C. stellulata*); Butler. Probably what is called *var. microstachys*. Boeckler, by Bailey.*flava*, L.; Nuttall.*folliculata*, L.; Nuttall.*grayii*, Carey. In moist woods at the south end of Main street, Little Rock.—Coville.*grisea*, Wahl.*laxiflora*, Lam. (*C. anceps*, Muhl.); Nuttall. Harvey.*var. heterosperma* (Wahl.), ESP. (*var. intermedia*, Boot.); Harvey.*lurida*, Wahl. (*C. lupulina*, Muhl.); Nuttall.*muhlenbergii*, Schk.*plantaginea*, Lam.; Nuttall.*rosea*, Schk.; Nuttall; Harvey herbarium at Fayetteville.*var. retroflexa* (Muhl.), Torr. (*C. retroflexa*, Muhl.); Harvey.*shortiana*, Dew.; Harvey.*squarrosa*, L.; Harvey.*stenolepis*, Torr.; Butler, Harvey.*stipata*, Muhl.; Butler.*straminea*, Schk.; Harvey.*var. alata* (Torr.), Bailey (*C. alata*, Torr.); Harvey.*tentaculata*, Muhl.; Nuttall, Harvey.*tribuloides*, Wahl. (*C. lagopodioides*, Schk.); Harvey.*triceps*, Michx.; Harvey.

- varia*, Muhl. (*C. emmonsii*, Dew.); Harvey.
virescens, Muhl.; Butler.
vulpinoidea, Michx.; Butler, Harvey.

GRAMINEÆ.

Paspalum, L.

- ciliatifolium*, Muhl.; Harvey.
floridanum, Michx.; Butler, Harvey.
fluitans, Kunth; Harvey.
læve, Michx.
purpurascens, Ell.; Nuttall.
racemosum, Nutt.; Nuttall.
setaceum, Michx.
stoloniferum, L.; Nuttall.

Anthænantia, Beauv.

- villosa* (Kunth), Beauv.; Nuttall, as *Panicum igno-*
ratum.

Panicum, L.

- agrostoides*, Muhl.; Nuttall, Harvey.
anceps, Michx.
capillare, L.; Nuttall, Harvey.
clandestinum, L.; Lesquereux, Harvey.
colonom, L.; Harvey.
crus-galli, L.; Nuttall, Lesquereux.
debile, Poir. (*P. hians*, Ell.); Nuttall, Lesquereux,
 Harvey.
depauperatum, Muhl.; Harvey. On the face of the
 rocky cliff at Mountain Park, near Little
 Rock, Coville.
dichotomum, L.
filiforme, L.; Nuttall. This is considerably out of
 range for this species—Coville.
gibbum, Ell.; Nuttall.
latifolium, L.
microcarpon, Muhl.; Nuttall.

nitidum, Lam.; Coville. Dr. Vasey concludes that this form must be separated from *P. dichotomum*. It has undoubtedly been found by others, but referred to the latter species—Coville.

proliferum, Lam. *var. geniculatum* (Ell.), Vasey; Nuttall.

sanguinale, L.

scoparium, Lam.; Coville, Harvey. Nuttall's *P. pauciflorum* probably goes here—Coville.

verrucosum, Muhl.; Nuttall.

virgatum, L.

Oplismenus, Beauv.

setarius, R. & S.; Nuttall.

Setaria, Beauv.

glauca (L.), Beauv.

Cenchrus, L.

tribuloides, L.; Nuttall, d'Ailly.

Spartina, Schreb.

cynosuroides (L.), Willd.; Nuttall, Harvey.

(*polystachya*, Michx., Willd.; Nuttall. The occurrence of this plant in Arkansas is doubtful—Coville.)

Tripsacum, L.

dactyloides, L.

Zizania, L.

aquatica, L.; Nuttall, Lesquereux.

miliacea, Michx.; Nuttall.

Homalocenchrus, Mieg. (*Leersia*, Sw.)

lenticularis (Michx.), Harvey.

oryzoides (L.), Poll.

virginica (Willd.), Britt.

Thurberia, Benth.

arkansana (Nutt.), Benth.; Nuttall.

Erianthus, Michx.

saccharoides Michx. (including *E. contortus*. Ell.);
Nuttall.

Rottbøllia, L.

cylindrica (Michx.) Torrey. (*R. campestris*, Nutt.);
Butler, Harvey. (Specimen in the National
Herbarium).

Andropogon, L.

glomeratus (Walt.), BSP. (*A. macrourus*, Michx.);
Nuttall.

provincialis, Lam.; Lesquereux, Harvey.

scoparius, Michx.; Lesquereux, Harvey.

virginicus, L.

Chrysopogon, Trin.

nutans (L.), Benth.; Lesquereux, Harvey.

var. avenaceus (Michx.) (*C. avenaceus*, Michx.),
Benth.; Harvey.

Phalaris, L.

intermedia Bosc. Reported also by Nuttall as *P.*
occidentalis, Coville.

Alopecurus, L.

geniculatus, L.; Nuttall.

var. aristulatus (Michx.), Munro; Butler, Harvey.

Aristida, L.

dichotoma, L.; Nuttall.

gracilis, Ell; Lesquereux, Harvey.

oligantha, Michx.; Nuttall, Harvey.

pallens, Nutt.; Nuttall.

purpurascens, Poir.; Harvey.

purpurea, Nutt.; Nuttall.

stricta, Michx.; Nuttall, Lesquereux.

tuberculosa, Nutt.; Lesquereux.

Stipa, L.

avenacea, L.; Nuttall, d'Ailly.

viridula, Trin.? (*S. parviflora*); Nuttall.

Muhlenbergia, Schreb.*capillaris*, Kunth; Nuttall.*diffusa*, Schreb.; Nuttall, Lesquereux.*mexicana* (L.), Trin.; Lesquereux.*var. filiformis*, Vasey; Harvey.*sobolifera* (Muhl.) Trin.; on the limestone bluff along the White River, five miles above Batesville, Coville; Harvey.*sylvatica* (Torr.), Torr. & Gr.*tenuiflora* (Willd.), BSP. (*M. willdenovii*, Trin.); Nuttall.*Brachyelytrum*, Beauv.*aristosum* (Michx.), Beauv. (as *B. aristatum*); Nuttall.*Aporobolus*, R. Br.*asper* (Michx.), Kunth.*heterolepis*, Gray; Harvey.*indicus*, R. Br.; Harvey. Streets of Little Rock, Coville. Reported by Nuttall, but outside the present boundaries of Arkansas, Coville.*vaginæflorus* (Torr.), Vasey; Lesquereux.*Agrostis*, L.*alba*, L. *var. vulgaris* (With.), Thurber; Nuttall, Harvey.*perennans* (Walt.), Tuck.; Nuttall.*hiemalis* (Walt.), BSP. (*A. scabra*, Willd.); Nuttall, Harvey.*Cinna*, L.*arundinacea*, L.*Deyeuxia*, Clar.*canadensis* (Michx.), Beauv.; Nuttall, Lesquereux.*Ammophila*, Host.*longifolia* (Gray), Benth.; Nuttall.*Danthonia*, DC.*spicata* (L.) Beauv.; Nuttall.*Cynodon*, Pers.*dactylon* (L.) Pers.

Ctenium, Pauz.

americanum, Spreng.; Nuttall.

Chloris, Sw.

cucullata, Bisch. Vasey in Descriptive Catalogue of the Grasses of the United States.—Coville.

verticillata, Nutt.; Nuttall. Probably outside the present boundaries of the State.—Coville.

Gymnopogon, Beauv.

ambiguus (Michx.), BSP. (*G. racemosus*, Beauv.)

Schedonnardus, Steud.

paniculatus (Nutt.) (*S. texanus*, Steud.); Nuttall, Lesquereux.

Bouteloua, Lag.

curtipendula (Michx.); Gray. (*B. racemosa*, Lag.)

oligostachya, Torr.; Nuttall.

Eleusine, Gærtn.

indica (L.), Gærtn.

Leptochloa, Beauv.

mucronata, Kunth; Nuttall, Harvey.

Triodia, R. Br.

seslerioides (Michx.), Benth.

stricta (Nutt.), Benth.; Nuttall, Harvey.

trinerviglumis (Munro), Benth.; Harvey.

Diplachne, Beauv.

fascicularis (Lam.), Beauv.; Nuttall, Coville.

Triplasis, Beauv.

purpurea (Walt.), Chapm.; Nuttall.

Phragmites, Trin.

vulgaris (Lam.), BSP. (*P. communis*, Trin.); Lesquereux.

Kæleria, Pers.

cristata (L.), Pers.; Nuttall, Harvey.

Eatonia, Raf.

obtusata (Michx.), Gray; Nuttall.

pennsylvanica, (Spreng.); Gray, Nuttall, Harvey.

Eragrostis, Beauv.*capillaris* (L.), Nees.; Nuttall, d'Ailly.*conferta* (Ell.), Trin.; Nuttall.*frankii*, Meyer; Harvey.*hypnoides* (Lam.), BSP. (*E. reptans*, Nees.)*major*, Host.; Butler.*minor*, Host.; Nuttall.*interrupta* (Nutt.) (*E. oxylepis*, Torr.).*pectinacea* (Michx.); Gray, Nuttall.*purshii*, Schrad.; Harvey. In the streets of Little Rock—Coville. The plant reported by Nuttall as *E. pilosa* is undoubtedly of this species—Coville.*tenuis* (Ell.), Gray; Nuttall, Harvey.*Melica*, L.*mutica*, Walt.; d'Ailly.*var. diffusa* (Pursh), Gray; Harvey.*Diarrhena*, Raf.*diandra* (Michx.), Hitchc. (*D. americana*, Beauv.); Nuttall, Lesquereux.*Uniola*, L.*latafolia*, Michx.*laxa* (L.), BSP. *U. gracilis*, Michx.)*Distichlis*, Raf.*maritima*, Raf.; Nuttall.*Poa*, L.*annua*, L.*nemoralis*, L.; Nuttall.*pratensis*, L.; Nuttall.*sylvestris*, Gr.; Butler, Harvey.*Glyceria*, R. Br.*fluitans* (L.), R. Br.; Nuttall, Harvey.*nervata* (Willd.), Trin.; Nuttall, Harvey.*Festuca*, L.*elatior*, L.; Nuttall, Lesquereux. The form is undoubtedly of the var. *pratensis*, (L.)—Coville.

nutans, Willd.; Butler, Harvey.

octoflora, Walt. (*F. tenella*, Willd.); Nuttall, Harvey.
sciurea, Nutt.; Nuttall. Probably outside the present
limits of the state—Coville.

Bromus, L.

ciliatus, L.

purgans, L. (*B. ciliatus*, L. var. *purgans*, L., Gray);
Harvey.

Hordeum, L.

jubatum, L.; Harvey.

pusillum, Nutt.; Nuttall, Lesquereux.

Elymus, L.

canadensis, L.; Nuttall.

striatus, Willd.

virginicus, L.

Asprella, Willd. (*Gymnostichum*, Schr.)

hystrix (L.), Willd; Harvey.

Arundinaria, Michx.

macrosperma, Michx.; Nuttall, Lesquereux.

var. *suffruticosa*, Munro; Nuttall.

CONIFERÆ.

Pinus, L.

echinata, Mill. (*P. mitis*, Michx.)

inops, Ait.; Nuttall.

rigida, Mill.; Nuttall. Harvey is of the opinion that
neither *P. inops* nor *P. rigida* is found within
the state—Coville.

tæda, L.

Taxodium, L.

distichum, Rich.

Juniperus, L.

virginiana, L.

SELAGINELLACEÆ.

Selaginella Beauv.

apus (L.) Spring.; Lesquereux, Coville.

rupestris (L.) Spring.; Lesquereux.

RHIZOCARPEÆ.*Marsilia*, L.

uncinata, A. Br. Underwood, in Our Native Ferns and their Allies, p. 115—Coville.

(The autonomy of the plant reported by Lesquereux, under the name of *M. mucronata*, Willd., as found by Nuttall, is uncertain—Coville.)

Pilularia,

americana, A. Br. Underwood, l. c., p. 116—Coville.

Azolla, Lam.

caroliniana, Willd.

OPHIOGLOSSACEÆ.*Ophioglossum*, L.

vulgatum, L.; Nuttall, Harvey.

Botrychium, Sw.

ternatum (Thunb.), Sw.; Nuttall, Harvey.

var. obliquum (Muhl.), Milde; Nuttall, Harvey.

virginianum (L.), Sw.

FILICES.*Polypodium*, L.

incanum, Sw.

vulgare, L.

Notholaena, R. Br.

dealbata, Kunze; Harvey.

Adiantum, L.

capillus-veneris, L.; Lesquereux, Harvey.

pedatum, L.

Pteris, L.

aquilina, L.

var. candata (L.), Hook.; Coville, Harvey.

Cheilanthes, Sw.

alabamensis, Kunze.

eatonii, Baker. In clefts in the rocks at Mountain Park, Big Rock, near Little Rock—Coville.

lanuginosa, Nutt.; Butler, Harvey.

tomentosa, Link.; Lesquereux, Harvey.
vestita (Spreng.), Sw.

Pellæa, Link.

atropurpurea (L.), Link.

Woodwardia, Smith.

areolata (L.), Moore (*W. angustifolia*, Smith); Harvey.
virginica (L.), Smith; Nuttall, Harvey.

Asplenium, L.

angustifolium, Michx.; Nuttall, Harvey.

bradleyi, D. C. Eat.; Harvey, Coville.

felix-fœmina (L.), Bernh.

parvulum, Mart. and Gal.; Harvey, Call.

pinnatifidum (Muhl.), Nutt.; Lesquereux, Harvey.

platyneuron (L.) Oakes, (*A. ebeneum*, Ait.)

ruta-muraria, L.; Nuttall; Lesquereux.

trichomanes, L.

Camptosorus, Link.

rhizophyllus (L.), Link.

Phegopteris, Fee.

hexagonoptera (L.), Fee.

Aspidium, Sw.

acrostichoides (Mich.), Sw.

cristatum (L.), Sw.

marginale (L.), Sw.

noveboracense (L.), Sw.; Harvey.

spinulosum, Sw.; Lesquereux.

thelypteris (L.), Sw.; Lesquereux, Harvey.

Cystopteris, Bernh.

bulbifera (L.), Bernh.; Harvey.

fragilis (L.), Bernh.

Onoclea, L.

sensibilis, L.

Woodsia, R. Br.

obtusa (Spreng.), Torr.

Osmunda, L.

cinnamomea, L.

regalis, L.

EQUISETACEÆ.

Equisetum, L.

hyemale, L.

RICCIACEÆ.

Riccia, Mich.

fluitans, L. *var. sullivanii*, Aust. In a swamp near Argenta. Another variety was found on the flood plain of the Arkansas near the Iron Mountain Railway bridge at Little Rock—Coville.

tenuis, Aust. In a swamp near Argenta—Coville.
(Some other puzzling forms of Riccias were found, which, as they were incomplete, could not be determined—Coville).

MARCHANTIACEÆ.

Asterella.

hemispherica, Beauv. In the Hot Springs—Les-queureux.

Dumortiera, Nees.

hirsuta, Nees. By a spring in the water-shed of Salado creek, Independence county—Coville.

Conocephalus.

cocicus, Dumort. Independence county—Coville.

ANTHOCEROTACEÆ.

Anthoceros, Mich.

lævis, L. In a swamp near Argenta; also by a chalybeate spring in section 15, township 12 N., 7 W.—Coville.

JUNGERMANNIACEÆ.

Aneura, Dum.

palmata, Nees. In a swamp near Argenta—Coville.

Frullania, Raddi.

squarrosa, Nees. On the bark of a specimen of *Quercus nigra* on the hills west of Little Rock—Coville.

virginica, Gottsche. Frequent on the bark of trees near Little Rock—Coville.

kunzei, Lehm. On a quartz boulder in the pine barrens west of Little Rock—Coville.

Phragmicoma.

clypeata, Sulliv. On the bark of a tree in a swamp near Argenta—Coville.

NOTES ON THE BOTANY OF ARKANSAS.

BY F. V. COVILLE.

My field work on the Botany of Arkansas began on the 5th of July and ended August 17, 1887. Of this time two and a half weeks were spent at Little Rock, the remainder in Independence and Stone counties.

From the botanical notes taken, the following report has been prepared. It must be borne in mind that many of the notes, particularly those on the distribution of species, which are of great value only when a large number have been collected, are necessarily omitted.

The reason that so comparatively little is known of the botany of this State is, to a great extent, due to the scarcity here of amateur botanists. The study of botany "for the fun of it" presents in every country so much that is both useful and pleasant, and in Arkansas, in addition, so much that is unknown, that the writer most heartily commends to the people of the State a careful study of their own wild plants.

The amateur will ordinarily begin his work by preserving a pressed specimen of each kind of plant that he meets with; and finding, if he can, its scientific name and common name. As a preface to this a short study of some work on structural botany is necessary. Gray's *Lessons in Botany* (1), in which directions for preserving plants are also given, answers the purpose admirably. For determining the names, the best book is Chapman's *Flora of the Southern States* (2.) Dried speci-

(1). *Lessons in Botany*, by Asa Gray (Revised, 1887). Ivison, Blakeman, Taylor & Co., New York.

(2). *Flora of the Southern United States*. By A. W. Chapman (Second edition). Ivison, Blakeman, Taylor & Co., New York.

mens of plants that the student is unable to determine should be sent to some competent botanist for identification.

The botanical characteristics of the region.—That part of the State in which our observations were made may be divided, for botanical purposes, into bottoms and uplands. The cultivated parts of the bottoms are largely devoted to the raising of corn and cotton. The wild parts are forests, or swamps, or flood plains.

In prairie regions the woods are confined to narrow strips along the margins of the streams; but in some districts, as near Olyphant, on the St. Louis, Iron Mountain and Southern Railway, the whole bottom is covered with a magnificent growth of timber. The most abundant trees of these forests are the sycamore, cottonwood, white oak, post oak, elm, hackberry, honey locust and sweet gum.

In the narrow strips above mentioned, the vegetation has a somewhat different character, forming dark matted copses. The trees are smaller and contain a different group of species. The box elder (*Negundo aceroides*), redbud, winter grape (*Vitis riparia*), two other grapes (*V. indivisa* and *bipinnata*), and the two canes (*Arundinaria macrosperma*, Mx., and *A. tecta*) are abundant in these places.

The swamps present a peculiar and fascinating appearance. Their most prominent feature is the magnificent bald cypresses (*Taxodium distichum*.) These trees grow in three feet or less of water, their enlarged conical bases partly submerged, and their "knees" projecting from the surrounding water like the stumps of young trees. On the surface of the water is often a bright, green scum composed of duckweeds (*Lemna* and *Spirodela*) and *Azolla*. In the center of the swamp the water is deeper, from six to eight feet, devoid of trees, filled with white water-lilies (*Nymphæa tuberosa* of Paine) and surrounded by a fringe of bur-reeds (*Sparganium* and *Rocladum* of Engelman.) A few cranes give the spot a lazy animation, the whole being dark, gloomy and tropical.

On the Arkansas the immediate flood plains or bars are sandy or muddy, according to the swiftness of the current in high water; are too moist for cultivation, devoid of trees, and have a scanty herbaceous vegetation. These flood plains appear to be the first resting places of many of the introduced weeds.

The uplands are hills a few hundred feet in height, separated by deep valleys. Most of the rivulets that come down the hillsides are dry in summer, so that nowhere were seen those moss-covered, verdant, wet ravines so frequently met with in mountainous districts.

When the hills are rocky they are practically covered by one immense forest, the land having been cleared only in patches here and there. The soil of the hills is often of sandstone origin and varies in its vegetation according to its depth. On the summits of some of the hills, where the soil is thin and the sandstone crops out or lies near the surface, the timber is light, the commonest and most characteristic tree being the black jack (*Quercus nigra*).

For the most part, however, the upland sandstone soil is deeper and bears a heavy growth of valuable timber. The short-leaved pine, post oak, white oak and hickory are the most valuable trees. At the present time much of this timber is wasted by girdling the trees, and after a few years burning the dead trunks, for the sake of clearing the land for agricultural purposes. "Deadenings," as they are called, of twenty acres or more, with corn planted among the standing trunks, are a common sight.

Besides the sandstone soil of the uplands, there is in many localities a limestone soil. The vegetation of these districts is markedly different from that of similarly situated sandstone soils. These differences are given below. Such land, when cleared, is well adapted for growing wheat.

It must be kept in mind that these observations on the kinds of soil met with apply merely to the region passed

through. For example, while the bottom lands are here largely under cultivation, in other parts of the state large areas of such exceedingly fertile soil lie uncleared. The predominance of sandy soil in the uplands, and the presence on the tops of the hills of black jack timber is merely local.

The effect of soil on the distribution of plants.—A portion of the writer's work in Independence county was to trace the parting between a stratum of sandstone and an underlying stratum of limestone. From the first it was noticed that the vegetation borne on the two soils formed from these rocks varied in general aspect, but when it came to stating the precise items of difference some difficulty was experienced, for lists of the plants seen on each of the soils were nearly identical. After a short time, however, the difference began to be perceptible. It lies in the preponderance of certain species, a very few possibly being limited to one of the soils. The difference is most strikingly seen upon hillsides, the bases of which are of limestone, the summits of sandstone. On the former soil the most abundant trees are the redbud (*Cercis canadensis*), the chestnut oak (*Quercus prinoides*), the black walnut and the shell-bark hickory (*Carya alba*). Rarely was any one of the first three of these found in the sandy soil above. The last mentioned is abundant in both situations. The sugar maple (*Acer saccharinum*) was sometimes found on the limestone, but never on the sandstone. The same is true of a skullcap (*Scutellaria versicolor*) and the harebell (*Campanula americana*). The other trees, which constitute the great majority of species, are scattered about equally over both soils. The height of the limestone above the bottoms of the valleys varies from two to three hundred feet down to nothing, while the change in vegetation is abrupt and coincides invariably with the change in soil, so that the climatic differences between the top and bottom of the hills are not the cause of a difference in vegetation. The depth of soil, too, appears to be about the same in both cases.

It appears certain, then, that the moulding influence, in this case at least, lies in the character of the soil. That action of the soil, however, which produces the above stated effects, may be either mechanical or chemical. It is to be noted, too, that the plants mentioned above as abundant on the limestone occur also abundantly in alluvial soil, and it is probably true that each one of these species has been found in other localities on both sandstone and limestone.

It appears, then, that under the same climatic conditions, the kind of soil materially effects the distribution of plants; certain species, while not absolutely requiring a particular soil, at least prefer it, and upon it stand a much better chance of survival.*

ECONOMIC NOTES.

Grazing plants.—Among the plants of economic value, *Lespedeza striata*, "Japanese clover," is worthy of especial notice. It is evidently a *Lespedeza*, though it does not agree with any of our described species.

According to the reports current among farmers, the plant was first seen in abundance from five to ten years ago. Whether then introduced or indigenous, they did not know. A gentleman informs me that the plant is also found abundantly in

*To Professor Coville's results we have to add the observations made by Dr. J. Francis Williams in studying the geology of Magnet Cove in Hot Spring county. Dr. Williams' work has been upon the geology of the eruptive rocks, and he finds it a rule with scarcely an exception that the pine does not grow upon soils derived from eruptive rocks, though it is very abundant in the adjacent areas of sedimentary rocks. See An. Rep. Geol. Survey of Ark., for 1890, Vol. II.

Such cases have fallen under my own observation in several places in the State, but I have usually found that the effect of soil upon tree growths manifests itself in the number of individuals present, rather than in the simple presence or absence of species. In Vol. II, pp. 56-57, of the Reports for 1888, Professor Hill has referred to the preference of the pine of southwest Arkansas for the Tertiary and Post-tertiary soils. The predominance of pine in the case he refers to is very marked, though pine is not confined to those geologic formations. It is simply a difference in quantity, but one which amounts to as sharp a division line as that between such colors as black and gray.—J. C. BRANNER.

Mississippi, where it has been known for many years. It is called quite generally throughout Arkansas and in Mississippi also, "Japanese clover." The characteristics of the plant that render it particularly valuable are, first, that it will grow in soil of extreme sterility; second, that it is an excellent grazing plant.

In the pine barrens south of Little Rock and on the dry summits of hills, it grows to a height of three or four inches, somewhat scantily to be sure, but nevertheless in sufficient amount for pasturage. In moister, deeper and less exposed soil, it grows to the height of a foot, and affords the best grazing. Cattle are very fond of it. The plant will undoubtedly become still more abundant.*

Bermuda grass (*Cynodon dactylon*) is a small, creeping plant resembling the common crab-grass both in habit and in its flower clusters, but it is smaller. In the country traversed, it appears only as a weed, and not in great abundance. It is spreading rapidly, and is considered, on the whole, the most valuable grazing plant of the South. A figure is given in the bulletin mentioned above, p. 25. This plant together with the crab-grass (*Panicum sanguinale*) should be encouraged in all places where pasturage is needed.

Weeds.—The weeds observed in Arkansas are very different from those of the eastern States, the latter being largely made up of plants introduced from Europe, while the weeds of Arkansas are mostly natives of the United States. Some of the most energetic of the trans-Atlantic species have, however, reached Arkansas. Conspicuous among these is the crab-grass (*Panicum sanguinale*), which is a most persistent pest in cultivated grounds. This is considered by the farming people

*It should be stated here that the sketch of this plant as given above, except the name, was written before seeing Dr. Vasey's account of it in Bulletin No. 3, of the Botanical Division of the Department of Agriculture, on the Grasses of the South. It is there stated to have been introduced from China about forty years ago, and to have become very valuable as a grazing plant throughout the Gulf States. An excellent figure is given in the above mentioned bulletin, p. 47.

the worst weed that they have to contend with. It spreads rapidly by the seed, so that it can scarcely be eradicated, but it must be kept down by constant plowing and hoeing. In its proper place, however, as a forage plant it is valuable, and is to some extent cut for hay.

Another very troublesome weed, a native of our own country, is the Spanish needles (*Bidens bipinnata*), which vies in persistence with the crab-grass.

The purslane (*Portulaca oleracea*), or "pusley," as it is more commonly pronounced, holds its place here as elsewhere.

In cornfields, two species of morning glory (one of them *Ipomœa nil*) and another plant called blue-vine (*Cocculus carolinus*) does considerable damage. All three are twiners, and choke and bend the cornstalks; frequently so overrunning a field as to seriously impede the progress of a person walking through it.

Three species of Cassia (*C. marilandica*, *C. obtusifolia*, and *C. occidentalis*) grow abundantly in the waste places about villages, being particularly abundant at Batesville and at Grand Glaise.

Yellow dog-fennel (*Helenium tenuifolium*) and white dog-fennel (*Maruta cotula*) are abundant, their usual habitat being along highways and on village commons, where they hold undisputed ground, for they are disliked by cattle. The yellow dog-fennel seems to confine itself to, or perhaps only yet to have become established in the lowlands.

In the streets of Little Rock the common weeds are *Chenopodium ambrosioides*, *Amarantus spinosus*, and *Solanum carolinianum*. *Solanum rostratum*, introduced from farther west, is beginning to appear along the railways, and promises to be a handsome weed, if nothing more.

A plant that has been long cultivated in the farming districts as an out-door ornament will add one more weed to the flora of Arkansas. This is *Pardanthus chinensis*, popularly known as "flag." It has escaped from cultivation in many

places in Independence county, and flourishes in fence corners, along roadsides, and even in thickets and woods. The seeds are not well adapted for wide and rapid dissemination; and the plant spreads mostly down hill, the seeds being carried along by the water in ditches and gullies. It takes up the ground pretty thoroughly as far as it goes, growing in large patches; but it is not difficult to keep in check, as one or a few plowings are sufficient to kill it.

Plants worthy of cultivation.—The beauty of many of the wild flowers of Arkansas is particularly striking to one unaccustomed to that flora. Those who make a business of the cultivation of flowers would do well to turn their eyes toward this state for the selection of worthy additions to their list.

Argemone mexicana, the prickly poppy, although an introduced plant, may be included among the others. This plant resembles a common poppy, but the leaves are prickly. The flower is three to four inches in diameter, and of a pure white color in all the specimens seen. It would undoubtedly grow well in dry soil.

Pancreatium rotatum is a remarkably handsome plant, about two feet high, with amaryllis-like leaves, and a tall scape bearing a cluster of a few large, white flowers, each with a central crown bearing along its margin the yellow anthers.

Agave virginica, the false aloe, is a plant related to the one just mentioned. At the ground there is a tuft of thick, stiff, dagger-like spiny leaves, from the center of which arises a slender naked stalk about five feet high, bearing along its upper part the peculiar, small, yellowish, fragrant flowers.

Monarda punctata, called in the botanies "horse mint," is a plant two or three feet high, bearing numerous spreading, aromatic leaves, topped with a close, large head of open-jawed flowers, rose-purple and yellow, spotted with brown. It is a common wayside plant, abundant near Little Rock.

Passiflora incarnata, which is here called "apricot," is a straggling, careless vine with triple-lobed leaves and flowers of

the peculiar passion-flower form, two inches in diameter and mottled with two shades of pale purple.

An Aster, *A patens*; *Bignonia capreolata*, the cross-vine; *Campanula americana*, the harebell; *Nymphaea tuberosa* and *odorata*, the white water lilies; *Nelumbium lutum*, the yellow lotus; *Polymnia canadensis* and *Uvedalia*; all of the *Pycnanthemums*, and the little moss-like *Selaginella apus*, certainly deserve cultivation.

Among trees, *Rhus glabra* and *copallina*, the sweet gum (*Liquidambar*), and the bald cypress (*Taxodium distichum*) would be in many respects ornamental.

Miscellaneous notes.—The fruit of the black sumac (*Rhus copallina*), and the white sumac (*Rhus glabra*) produces on its surface a slippery whitish transparent coating, which is composed largely of malic acid. The writer was accustomed when thirsty, after walking for several hours in the hot sun, to take these little seed-like fruits in his mouth and suck off the acid coating. The effect is like that of any acid drink, under similar circumstances, cooling and invigorating. The acid is easily dissolved in warm water, and with the addition of sugar would be a healthful and pleasant drink. The inner part of the fruit is not poisonous, and the whole of it is sometimes eaten.

A plant, of which only a mutilated specimen was seen, but which is probably *Nicandra physaloides*, is an excellent fly poison. The method of using it is to pound up the stems and leaves, so that the juice may be readily expelled, and then to put the whole mass into a pan partly filled with buttermilk. The flies are attracted by the buttermilk, and killed by the juice of the plant. The name given to this flower is "twelve o'clock," from the fact that the corolla opens, for a little time only, about mid-day. A similar use is made of the seeds of the coffee bean (*Gymnocladus canadensis*), they being pounded up and applied in the same way. Chair bottoms, and excellent ones too, are made of the inner bark of the basswood (*Tilia americana* and its variety), this tree being the stock source of

the material used in some localities for that purpose. The bark is divided into thin strips about three-fourths of an inch wide, and these are woven across the chair after the manner of basket work.

There is another subject in economic botany that deserves to be looked into more thoroughly than the writer was able to do in the brief time at his disposal; that is, the utilization of natural fruits, and the cultivation of those already known. The fruit of the wild plum (*Prunus americana*), several of the red haws (*Cratægus*), the muscadine (*Vitis vulpina*), the persimmon (*Diospyros virginiana*), and the black haw (*Viburnum prunifolium*) are, to say the least palatable; and some of these and many other trees would undoubtedly make excellent stocks for the grafting of the best varieties of fruit now cultivated.

The natural adaptation of the upland soil to the cultivation of fruit is undoubtedly great, as may be inferred from the original vegetation, and as demonstrated by the success of the little that is already cultivated. Unfortunately there seems to be an apathy among the farmers to the innovation of growing fruit for a distant market, and usually, too, those who have attempted it have not been careful to procure the varieties best adapted for such purposes. But for those who will go at the matter energetically and carefully, there is an excellent opening.

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