

ALSOGRAPHIA

AMERICANA;

OR AN

AMERICAN GROVE

OF TREES AND SHRUBS.

BY C. S. RAFINESQUE, A. M.—Ph. D.

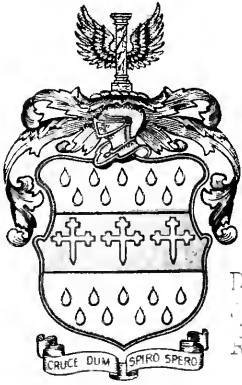
*Prof. of Botany, the Historical and
Natural Sciences &c.*

PHILADELPHIA.

1838.

PRICE ONE DOLLAR.

UNIVERSITY OF PITTSBURGH



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ALSOGRAPHIA

AMERICANA,

Or an AMERICAN GROVE of New or revised Trees and Shrubs of the Genera Myrica, Calycanthus, Salix, Quercus, Fraxinus, Populus, Tilia, Sambucus, Viburnum, Cornus, Juglans, Æsculus &c, with some New Genera, Monographs, and many new Sp. in 330 articles, completing 1405 G. and Sp. as a continuation of the SYLVA TELLURIANA and NORTH AMERICAN TREES & SHRUBS,

BY C. S. RAFINESQUE, A. M.—Ph. D.

Prof. of Botany, the Natural and Historical Sciences, member of many learned Societies in Europe and America, author of the New Flora of North America, Flora and Sylva Telluriana &c.

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1871

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INTRODUCTION.

This Supplement to my *Trees and Shrubs of North America*, is now given as promised, while a *Monograph of the Mulberry Trees* will be printed apart, and the *Pomona* or native fruit trees of North America shall speedily follow.

The subject is far from being exhausted; as I proceed in the investigation, I perceive that much remains to be done and learned. We know less of many Genera and groups of Trees, than of some other plants of less size, value and beauty—The proper discrimination of the collective forms assumed by vegetation is now merely beginning, and the groups of Species, Genera, Families &c, assuming a more accurate determination.

It is strange that while the Anatomical Botanists, dissect the seeds and lignose fibres of trees &c, they skip over or overlook the outward organs and forms that characterize these groups. Thus in most of the *Trees and Shrubs*, the botanists have hardly noticed or alluded to the shapes of the twigs, whether round, square, angular, smooth, grooved, rugose, verrucose, squamose &c, although they afford very conspicuous and permanent characters for species. The petiols, veins and nerves of leaves, pubescence, kinds of teeth on the margins, afford others equally good. While for Genera, the general habit, the inflorescence, and relative number, shape or size of the floral organs, offer a crowd of perspicuous distinctions, without the need of the Microscope.

I would not undervalue minute dissections in the study of internal organs, but descriptive Bot-

any is quite distinct from Anatomical Botany, and as we know and ascertain the Genera of Quadrupeds by their feet, teeth, and other external organs—of Birds by their feet, toes, bills &c—of Fishes by their shapes, fins, gills, jaws, scales &c—thus we must and *are able in all instances* (unless when led astray by anatomical superfluities) to ascertain all the groups, families, Genera &c of Plants, by their external floral organs, including the fruit and seed; but not requiring any more to look into the inside of a seed, than it is required to look into the inside of an egg to know the Bird that it may produce or was the mother of it.

This will account for the little use I make in my works of anatomical dissections, while there is a crowd of external organs to study and employ, which others undervalue or neglect. Those that I employ will lead me to a very deep and minute analysis of generic characters, and are by no means more variable or less important than any internal structure: since any such internal structure always evolves an adequate corresponding display of forms in external organs.

ALSOGRAPHIA AMERICANA.

1. *Lomilis* Raf. Dioica? fl. masc . . . fl. fem. calix duplex, persistens, externus 2partitus, lac. ovat. acutis, cal. intern. plano rotato, 4lobo, lobis subineq, subrot. undul. petalis nullis, ovario depresso in lana alba obvoluto, stig. 2 glabris obt. nigrescens, capsula 2loc. 2sp? *Frutex. fol. alt. distichis, non obliq. fl. axil. solit. sessilib.*—A curious N. G. akin to Hamamelis and Fothergilla, but habit very different although imperfectly known, and the ripe fruit lacking, it is certainly unlike any other, and the foliation is quite peculiar. The generic name applies to the singular edge of the leaves.

2. *Lomilis ciliata* Raf. Ramulis teretis ad apice pilosis, fol. subsessilib. ovatis utrinque acutis, mucronato-serrulatis, margine ciliatis nervisque subtus pilosis, supra glabris nervis sulcatis—from the Unaka or Cherokee Mts. so rich in rare plants, found by Kin, Anonymous in Collins Herbarium. Apparently a shrub, bark fuscate peeling off in threads below, but pilose above, leaves 1 or 2 inches long, variable in breadth, some narrower oblongate, some sub-oval, rather thin concolor, with veins minutely reticulate beneath. Flowers few scattered sub-axillary sessile, rather large or half inch broad of a greyish color.

3. *GEISARINA* Raf. (imbric. with male) Dioica? fl. masc. cal. globos. scariosus imbric. lac. ext. subrot. petalis oblongis obt. parvis 6-8, stam. paucis 6-12, antheris subsessil. oblongis margine dehiscens 2loc. fl. fem . . . *Frutex ramis fol. oppos. fl. ante fol. sparsis sessilib.*—Another N. G. near to Calycanthus and Chimonanthus, altho' female flowers unknown; but very distinct by flowers and branches.

4. *Geisarina verrucosa* Raf. Ramulis sub4gonis verrucosis, fol. petiol. obov. serrulatis vix acutis, basi integris, florib. sepe oppositis nudis—West of Arkanzas and Missouri, found by Nuttall also but anonymous in Collins herb. the flower produced before the leaves. A shrub, wood white, bark greyish with large flat warts and obtuse angles. leaves uncial stiff smooth; flowers small pale fulvous looking like buds, calix with many scariose persistent sepals, petals hardly longer nor very different. To compare and contrast this with the 2 akin Genera I add them with some new species. Probably all are polygamous.

5. CHIMONANTHUS Lindley, calix imbric. petalis coloratis pluris basi connatis, stam. sepe 10 ineq. 5 major basi monadelphis, plura, sterilis, pistilis 2-6, akenis 2-6 monosp. *Fol. opp. integris semper. fl. axil. sessil.*—The Calycanthus precox was the type of this, blending several sp. whereof I will give two, both from Japan and China and seen alive.

6. *Chim. fragrans* Raf. ditto var. grandifl. Lind. bot. reg. 431. &c—fol. petiol. obl. lanceol. acum glabris, fl. petalis luteis obl. patulis.

7. *Chim. parviflorus* Raf. var. do auct. ramulis teres rugos. fol. ovato lanceol. acum. scabris, fl. parvis, petalis clausis viridescens.

8. CALYCANTHUS L. This G. differs from both the preceding by the calix colorate gradually changing into petals, many stamens and pistils, many akenis enclosed in the ventricose and succulent calix as in *Rosa*; whence I had in 1815 united it to my reformed family of ROSACEA, with Citrosma, Basteria, my Hetridmus &c. These G. are also akin to Monimia and Atherosperma now formed into a peculiar fam-

ily hardly different from *Rosa*, much less so than *Rubus*, *Spirea*, *Agrimonia* and others blended with *ROSACEA*, but all peculiar. Types of families in my order *RHODANTHIA* the first of my serial orders, which will include the families of *ROSIDES*, *SENTICOSES*, *POTERIDES*, *GONOLIGES*, *SPIREADES*, *MONIMIDES* &c.

As to the sp. of *Calycanthus*, Linneus had only one, which is now found to include half a dozen! not yet well settled and requiring a good monograph; I have seen them alive or dry; all included in *C. floridus* of Lin. &c, and all with entire leaves on short petiols.

9. *Calyc. mollis* Raf. *floridus* of Amer. bot. Ramulis unifloris teretis pubescens, fol. ovatis et ellipticis, basi acutis, apice acumin. subtus villosis mollis pallidis, supra scabriusc. reticul. fl. sessilib. odoratis, petalis cuneatis fuscatis—Carolina to Florida &c, by no means the most common kind, and very rare in gardens, not deserving the name of *floridus* more than any other. Twigs fuscate patent. leaves large 3 to 4 inches long, flowers greenish fuscate outside vernal as in all.

10. *Calyc. tomentosus* Raf. Ramulis multifl. 4gonis levis virgatis atropurp. fol. ovatis, obl. vel. obov. acutis vel. obt. supra glabris, subt. tomentosis, fl. lateralis sessil. petalis lanceol. viridescens—Alabama and Louisiana, very different from last by twigs thicker smooth angular with many lateral flowers smaller quite greenish.

11. *Calyc. reticulatus* Raf. *levigatus* Pursh, *El. ferax* Mx. &c. Ramulis unifl. teretis rugosis glabris, fol. ovatis acum. basi obt. vel. subcord. concolor reticulatis glabris, fl. term. sess. petalis lanceol—Carolina &c, twigs fuscate,

leaves and flowers large as in *C. mollis*, leaves strongly netted on both sides, rather roughish than levigate.

12. *Calyc. verrucosus* Raf. Ramulis sepe dichot. subangul. verrucosis, fol. lanceol. vel oblongis acumin. basi acutis levis concolor, fl. term. sepe geminatis peduncul. petalis lin. lanc. atropurp.—very distinct sp. by warts, yet blended with last, from Mts. of Carolina, Unaka &c, twigs fuscate, leaves thin, small biuncial not reticulate, flowers large odorous, often cultivated for *C. floridus*. It has some var. gradually blending with the next.

Var. *parviflorus* R. fol. subretic. fl. lat. et term. parvis.—Apalachian Mts.

Var. *multiflorus* R. fol. variabilis nonnullis ovatolano. vel cuneatis,—In Alabama, many short lateral twigs bearing large flowers.

Var. *cuneatus* R. fol. variabilis, nonnullis cuneatis obtusis, fl. parvis.—Apalachian Mts. twigs pale with few warts, leaves and flowers small.

13. *Calyc. glaucus* W. P. fertilis Walt. Edw. bot. reg. 404. Ramulis unif. teretis rugosis, fol. obl. lanceol. sepe scabris interdum obliquatis, acumin. subtus. glaucis reticul. fl. term. pedunc. fragrans petalis cuneatis—from Carolina to Louisiana, with several varieties. Twigs patent fuscate, leaves 2 to 6 inches long, flowers large dark purple.

Var. *longifolius* Raf. fl. longo lanceol. supra rugosis—Alabama, some leaves 6 to 8 inches long.

The *Calyc. inodorus* of Elliot might be deemed a var. also by some, but it has the twigs virgate sub4gone, the leaves smoother variable, in my var. *heterophylla* they are ovate and obval, oblong and elliptical, acute, acuminate and

retuse on the same twigs, the flowers are similar but inodorous and with narrow petals.

WAX TREES—MYRICA.

14. *MYRICA* L. auct. must be divided in 4 Genera *Cerophora*, *Fayana* and *Nageia*, that are the types of family *MYRICOIDES* in nat. order *AXANTHIA* or *Amentaceous*, distinguished by berries or drupes. The real *Myrica* Raf. has—*Amentis sparsis*. *Lepigonis squam. Stam. 6*, *drupis globosis ceriferis*, *stylis 2*—It has been increased of 6 sp. by Kunth, and I shall now add a dozen from my Herbarium.

15. *Myrica verrucosa* Raf. *Myr. cerifera* Sw. *Lunan (non alis) Arborea*, *ramulis verrucosis*, *fol. cuneat. obt. rugosis glaucis*, *subt. poroso-glandulosis*, *drupis subrot. luteis*—a very distinct sp. from Antilles, different from those of N. Amer. usually blended.

16. *Myrica fuscata* Raf. *ramulis fuscatis squamulosis*, *fol. petiol. oblongis. basi cuneatis*, *integris acutis supra lucidis fuscatis*, *subtus rufescens punctato squamosis*, *amentis densis breviss. oblongis*—discovered by myself in the hills of Kentucky in 1819, shrub 4 to 5 feet high, leaves biuncial, catkins minute dense, only 2 or 3 lines long, growing below the leaves on old branches.

17. *Myrica heterophylla* Raf. *arborea*, *ramis nigrescens pubesc. fol. ellipt. and obov. subpet. integris vel apice grosse serratis acutis*, *utrinque glabris sed nervo medio supra and subtus pubescens*—Carolina to Florida, probably one of the sp. blended in *M. cerifera*. name unmeaning since all bear wax: leaves larger broader and thinner than in last, sometimes opposite, or obliquial, or really elliptical. Seen alive in gardens.

18. *Myrica sessilifolia* Raf. fruticosa, ramis cinereis puberis, fol. sessilib. cuneatis acutis, apice parce serratis, glabris, nervo medio subt. puberis, margine revolutis ciliolatis, drupis subracem. globosis parvis granulatis cerulescens—on the Sea Shores from New Jersey to Florida, shrub 4 to 8 feet high, leaves smaller uncial, berries small, probably the *M. cerifera pumila* of Mx. not Bartram, which is 20.

19. Var. *latif.* diff. fol. nonnullis obovatis integris, vel obl. cuneatis acutis vix serratis—with the last, probably the var. media of Mx.

20. *Myrica pusilla* Raf. cerif. pumila Bartr? caule pumilo piloso angulato, fol. sessilib. obov. and cuneatis, apice ineq. serratis acutis, supra rugosis, subtus ferrugineis glabris, margine et nervo ciliatis—minute shrub, only 3 to 6 inches high, in Alabama and Florida, leaves very unequal and less than one inch long, Bartram calls them sinuate and yellow pulverulent.

21. *Myrica Pennsylvanica* Duh. Lam. Eat. *M. caroliniana*? W. &c, ramulis villosis, fol. pet. coriaceis subintegris ellipticis basi cuneatis apice acutis, utrinque glabris, supra granulatis, subtus porosis non reticul, marg. revolut, baccis albis granul. sessilibus—a sp. long deemed doubtful, now perfectly distinguished by myself, Mts. Alleghanies. As to the *M. caroliniana* it is yet doubtful, unless it is my *M. heterophylla* or *ferruginea*?

22. *Myrica undulata* Raf. ramis glabris, fol. petiol. ovatoobl. obtusis, coriaceis glabris glaucis undulatis integris, subtus minute reticulata sublacunosis—very distinct sp. leaves attenuated upwards, base not cuneate, quite glaucous as in *M. verrucosa*, almost shaped like Bay leaves, 2 inches long, having the fragrant smell of *My-*

rica. Described from a specimen in Collins herbarium, is it a real *Myrica*?

23. *CEROPHORA* Raf. Gale, Tourn &c. *Myrica* L. auct. diff. stam. 4, stylis 2-3, drupis caliculatis ceriferis, this is at least a subg. and has even 2 subgenera, *Gale* was a Dutch name.

24. Subg. *CEROCARPA* R. stylis 2, baccis globosis, glomeratis sparsis vel axillaribus, vix caliculatis, lepigoni subrot.—all the *Myricas* with 4 stamens ought to belong here.

25. Subg. *GALESTIS* R. stylis 3, baccis trilobis capitatis axill. vel spicis racemosis, bracteatis, lepig. dilat. acutis.

26. *Cerophora* (*Cerocarpa*) *lancoolata* Raf. *Myrica* cerifera arborescens Mx. Myr. cerifera of N. Am. &c.—ramulis glabriusculis fuscatis, fol. pet. lanceol. utrinque attenuatis acutis vix cuneatis apice subserratis glabris, subtus porosis, drupis albis globosis granulatis glomeratis—The most usual sp. and M, *cerifera* of N. Am. botanists, a small tree 5 to 20 feet high, growing on the Sea Shores, leaves uncial coriaceous evergreen as in all, somewhat fuscate, but very different from my *M. fuscata*, not scaly beneath but porose. Seen alive.

27. *Ceroph.* (*Ceroc.*) *inodora* Bartr. Raf. fol. lanceol. integris nitidis. drupis glomeratis globosis magnis albis—small tree 10 feet high found near Mobile by Bartram 60 years ago, leaves scentless, berries crowded as large as small cherries. Is it a var?

28. *Cerophora* (*Galestis*) *angustifolia* Raf. *Myrica* gale Mx. P. &c, ramis glabris atratis, fol. sessilib. angusto cuneatis, apice argute serratis emarg. glabris, subtus pallidis reticul. amentis axil. drupis cinereis, globosis axil. glomeratis, bracteis squamosis glabris—from New

England to Carolina, small shrub, sadly mistaken by the botanists, blended with last by Elliot in his description of *M. cerifera*! Michaux made it similar to the European and ascribed ciliate bracts to it, not so in my specimens, and I have European specimens quite unlike it, nay so different from even the presumed *Myr. gale* that I must describe it.

29. *Cerophora* (Galestis) *spicans* Raf. *M. gale* nonnullis, ramulis atratis apice pilosis foli petiol. cuneatis apice subserratis, supra glabris, subtus villosis, amentis in spica ramosa terminalib. oblongis, drupis spicatis trilobis? bract. sq. glabris—sent me from Germany as *M. gale*! which ought to have axillary fruits, while they are as in next *G.* in compound terminal spikes. A var. *rufa*, has twigs rugose, leaves broader, smooth and rufous beneath.

30. *FAYANA* Raf. Type *F. azorica* Raf. *Myr. faya* L. auct. This *G.* differs from *Myrica* by drupes elliptical, 2-4loc. aments compound, the female interrupted—The *G. Nageia* of Gaertn. W. P. &c, has a true calix 4phyl. drupe not ceriferus 2 sp. N. *Japonica* and *Ara-bica*, this last was the *Buxus!* *dioica* Forsk.

SALIX or WILLOWS.

31. *SALIX* L. &c this *G.* of trees and shrubs was deemed very natural until so greatly increased (to nearly 200 sp.) and the anomalies detected: good monographs have been given by Poiret, Willdenow of 116 sp. Smith of 141. I proposed ever since 1817 to have ten Genera, and now will propose 22, that must at least be deemed subgenera; I shall refer nearly all the sp. to them, except such of which the flowers are unknown. They form with *Populus* and

akin G. a new family **SALIXIDES** Raf. Salicea Richard, in the natural order **AXANTHIA** or the **Amentaceous**, see till 53.

SALIX Raf. stam. 2 liberis, ovar. sess. stylo simplex, stig. 2 emarg. nect. 0—such are *S. myrsinites*, *hastata*, *serrulata*, *ammaniana*, *tenuifolia* Sm. *precox*, *babylonica?* *forbiana* Sm. *vacuinif.* Sm. *venulosa*, *arbutif.* *berberif.* *vestita*, *lanata*, *pontederana*, *rigida*, *riparia*. *jaquiniana*, *Kitaibeliana*, *cinerascens*, &c, with many others yet doubtful.

832. **DIPLIMA** Raf. diff. *Salix*, stylo bifido, stig. 4—Types **D.** or *S. arenaria*, *stuartiana*, *viminalis*, *stipularis*, *weigeliana*, *chrysantha*, *lucida* ov. subsess. &c.

33. **VETRIX** Raf. 1817, diff. *Salix*, fl. masc. monandris—Types **V.** or *S. helix*, *purpurea*, *lambertiana*, *forbiana*, and the next, see also, 58.

34. *Vetrix sicula* Raf. 1817. frut. fol. suboppos. subpet. obl. cuneatis acutis integris, amentis oppositis, stig. incrassatis—shrub 6 to 10 feet high, branches viminal,—Sicily, banks of streams, called *Udda* like most Willows in Sicily. The opposite position of branches, leaves &c is remarkable, but often happens also in *V. helix*.

35. **ARGORIPS** Raf. (white W.) diff. *Salix*, stam. 2 villosis, nect. vel cal. in fem. diphylo, stig. subsessilib. dilat. vel bifidis—Type **L.** or *S. alba* and *cerulea*.

36. **OISODIX** R. 1817 diff. *Salix*, stylo nullo, stig. 2 sessilib. integris—Types **D.** *holosericea*, *glauca*, *serpyllif.* *reticulata*, *decipiens*, *longifolia* &c.

37. **VIMEN** Raf. 1817, diff. *Salix*, ovar. and

caps. pedunculatis—such are most of the Oziers. *V. or S. repens*, *prostrata*, *cinerea*, *muhlenbergiana*, *bicolor*, *silesiaca*, *wulfeniana*, *phylicifol.* *hastata*, *discolor*, *prinoides*, *malifolia* Sm. *myricoides*, *violacea* Sm. *russeliana* Sm. *starkeana*, *retusa*, *uva-ursi*, *parvifolia*, *pyrenaica*, *involutea*, *cotinifol.* *andersoniana*, *fosteriana*, *acuminata* &c, and probably several others; but the authors do not always mention the style and thus leave them doubtful if belonging to this G. or next.

38. **USIONIS R.** (ozier) diff. *Salix*, ov. and caps. pedunc. stigm. sessilib—*O.* vel. *S. aquatica*, *aurita*, *grisea*, *uliginosa*, *rosmanif.* *fuscata*, *pedicellaris*, *foliolosa*, *dicksoniana*, *petiolaris*, &c. The doubtful between this G. and last are *S. lapponica*, *nigricans*, *serotina*, *cesia*, *myrtioides* &c that must be verified.

39. **BIGGINA R.** (bot) diff. *Salix* ut *Vimen*, sed stylo bifido, stig. 4 ut *Diplima*—Type B. s. *S. conifera*, *angustata*, *argentea*? &c.

40. **NECTOPIX R.** diff. *Salix*, ovar. et caps. ped. stig. subsess. nect. pedicel. compresso, caps. turgidis—Type N. s. *S. caprea*, *sphacelata*, *rhamnifolia* &c.

41. **RIPSELAXIS R.** (small *W.*) diff. *Salix*, nect. vel cal. binis, stylo breviss, stigm. 2 bifidis—near to *Oisodix* by nectary or rather calix, single type R. *herbacea* Raf. *Salix* do L. auct. a dwarf woody plant.

42. **NECTUSION** Raf. diff. *Salix*. fl. fem. nect. 4, stig. 2 sessilib. bifidis.—Type N. or *S. reticulata*.

43. **URNECTIS** Raf. diff. *Salix*, nect. urniformis—Type U. or *S. hirta*, but fem. fl. lacking.

44. **SOKOLOFIA** Raf. (bot) diff. *Salix*, nect. pa-

piloso, ovar. pedic. stylo bifido, stig. 2 integris—Type *P. rupestris*.

45. *DIAMARIPS* R. (2 united W.) diff. *Salix*,
stam. 2 basi monadelphis, stig. 2 sessilib—Types
D. or *S. rubra* and *Croweana*.

46. *NECTOLIS* R. diff. *Salix*,
stam. 2-3, nect. 2-3squamis, stig. 2 sessilib. bilobis—Types *N.*
vitellina, *ambigua*, *membracea*, *hipophefolia*.

47. *PSATHERIPS* R. (brittle W.) diff. *Salix*,
stam. 2, 3, 4, 5, nect. globoso glandul. in fl.
masc. stylo brevis—Type *Ps. fragilis* R. *Salix*
do auct.

48. *TELESMIA* R. (complete) diff. *Salix*, fl.
hermaphr. stam 2, ovar. subsess. stig. 2 sessilib.
bilobis—Type *T. hermaphrodita*.

49. *DIPLUSION* R. (double ozier) 1817, diff.
Salix, stam. 3, ovar. pedic. styloso—Types *D.*
or *S. cordata*, *rigida*, *undulata*, and *lucida* with
bifid style.

50. *NESTYLIX* R. diff. *Salix*, stam. 3, ovar.
ped. stylo nullo. stig. scss.—Types *N.* or *S.*
arborea (*triandra* L) *amygdalina*, *villarsiana*, and
hopeana with monoical catkins, *falcata* ?

51. *AMERINA* R. (plinius name) diff. *Salix*,
stam 5-6sepe barbatis, interdum 4, 7, ovar. pedic
styloso stig. 2-3fidis—Types *A.* or *S. glandulosa*
(*pentandra* L.) *nigra*, *tinctoria* Sm. *Caroliniana*?
Mx. &c, *houstoniana*, *tomentosa* &c. see 54, 55.

52. *RIPSOCTIS* Raf. stam. sepe 8 glabris,
caps. brevi ped. stylo brevis, stig. 2 integris.—
Types 1. *R. indica* Raf. *Salix 4 sperma* Roxb.
2 *R. egyptiaca* Raf. *Sal. octandra* Sieber.

53. *PLEIARINA* R. diff. 51, stam. plurimis
5-9glabris, ovar. ped. stig. sessilib—Type *Pl.*
or *S. humboldiana*, and perhaps *S. hirsuta* 5-6.

What a diversity of structure in flowers, such
as form *G.* in other families! my names are all

classical, or well framed. I could add here many doubtful sp. of my herbarium, but as I do not always possess both flowers, it is not easy to ascertain the real Genera, I will however add some from N. America, see till 860.

54. *Amerina baldwiniana* Raf. arborea, ramulis rugosis atropurp. fol. petiol. ellipt, et obl. acutis serrulatis glabris subtus glaucis, amentis teretis laxis, lepigonis ovatis acum. villosis, stam. 4-5 filif. elongatis---Florida, disc. by Baldwin, I lack the female flowers, but it is of this G. by the villose stamens, leaves uncial or less, catkins longer. near to *A. caroliniana* with sessile leaves, oblong scales &c.

55. *Amerina missurica* Raf. arborea ramulis levis lutescens, fol. petiol. lanceol. acum. serrulatis glabris subtus pallidis, amentis teretis incurvis densifl. lepig. ovatis toment. stam. 5-6 longior—on the banks of the Upper Missouri, disc. by Bradbury 1809.

56. *Oisodix fulva* Raf. arborea ramulis subrugosis fulvis, fol. inferis subsessil. obl. and cuneatis acutis integris, superis petiol. lanceol. acum. serrulatis, omnis utrinque adpresso sericeis: amentis fem. term. teretis laxis, lepig. breviss. capsulis conicis glabris fulvis rufis—from Oregon? seen alive, small tree, the capsules when opened contrast by their rufous color with the white down, making the spikes bicolor. male fl. not seen, near to *O. holosericea*.

57. *Oisodix oblongifolia* Raf. subarborea, ramis atropurp. subangul. fol. petiol. oblongis sublan. utrinque acutis integris vel subserrul. supra glabris, subtus discolor canis sericeis; amentis antefol. sess. brevis obl. imbricatis sericeis—from Maine and New England, akin to *O. holosericea*, leaves uncial broad not acumi-

nate, catkins half inch long, male fl. lacking, one of the basket willows,

58. *Vetrix? linearifolia* Raf. frut. ramis virgatis angul. fuscatis, fol. sessilib. linearib. cuneatis acutis integris vel subdenticul. glaucescens subtus puberis, amentis terminalib. tenuis laxis, squamis obl. obt. membr. ciliatis, masc. monandris. stam. sq. eq—a very distinct sp. from Missouri, blended by Nuttal with *S. longifolia*, which I have also and is a real *Oisodix* with 2 long stamens. Shrub of Missouri, leaves one inch long or less, very narrow, catkins with leaves slender, the female flowers a little different from *Vetrix* by pistils either sessile or shortly peduncled, stigmas deeply divided so as to appear 4: thus a kind of passage to *Diplima* and forming a subgenus *Stenalix*.

59. *Salix? repanda* Raf. Frntesc. ramis teretis rugosis fuscatis, fol. petiol. longe et anguste lanceolatis utrinque acutis margine integris subrepandis, supra glabris, subtus argenteo sericeis—apparently a very distinct sp. although akin to *S. argentea*, and perhaps a *Biggina* like it; but I have not the flowers. Found by Bartram in Florida and blended by him in his garden with *S. humilis* of Marshall which has been referred to many sp. This is also small, but with long narrow leaves 3 to 4 inches long.

60. *Usionis humilis* Raf. *Salix* do Marsh. *S. incana?* Mx. *muhlenbergiana*, *tristis*, *grisea* &c of many Amer. botanists—Ramis subangul. lutesc. fol. sessil. cuneatis acutis subintegris marg. revolutis, supra glabris pallidis, subt. tomentosus canis; amentis antefol. breviss. ovatis, sq. ovatis toment. stam. elongatis, caps. brevi pedic. tomentosus conicis—such is a very common shrubby willow of the Alleghany Mts. first

noticed by Marshall, since blended with many others, leaves uncial wedged, not serrate as in *S. grisea*, nor lanceolate as in *S. muhlenb.* nor linear as in *S. tristis*.

QUERCUS or OAKS.

61. QUERCUS L. auct. another G. of 125 sp. which like *Salix* has been deemed natural, although with many anomalies, and the flowers well noticed in but few. It must be divided in many subg. at least, that might as well be Genera, and with *Corylus*, *Fagus*, *Castanea* &c, form the family of CUPULIFERES. The *Platanides* and *Garrides* are subfam. of it. We have many monographs by *Lamark*, *Dutour*, *Martyn*. *Michaux*, *Wildenow*, *Smith* who has 84 sp. and *Kunth* has 24 mexican sp. *Eaton* has 36 N. American, yet *Linneus* had only 19 in all each including several, and many are yet undescribed. see till 112.

62. QUERCUS Raf. Monoic. fl. masc. cal. 5-6 part. stam. 5-10, stylo unico brevis crasso stig. 3lobo vel 2-5stig. cupula integra squamosa vel tuberc. glans levis—such are most of the sp. but many must be verified and the flowers described. Types *Q. suber*, *ilex*, *agrif*, *magnolia*, *diversifol.* *ballota* (stam. 7,) *gramuntia*, *coccifera*, *pseudococ.* *pumila*, *rotundif.* *lusitan.* *to ment.* *circinnata*, *prinos*, *chineapin*, *montana*, *bicolor*, *eastanea*, *nigra*, *aquatica*, *triloba*, *nana*, *hemisph.* *elongata*, *tinctoria*, *discolor*, *rubra*, *coccinea*, *acutif.* *illicif.* *aegilops*, *pseudosuber*, *aesculus*, *robur*, *sessiliflora*, *pubescens*, *pyrenaica*, *faginea*, *obtusiloba*, *atrovirens* (*Martyn*) &c, with the following new sp. till 90 in 4 subgenera, *Robur* leaves deciduous, 2 *Suber* leaves evergreen, 3 *Albinus* cups tubercular, 4 *Cuspidicus* leaves cuspidate.

63. *Quercus dispar* Raf. frutescens, fol. obovatis sinuatis, subtus villosis, fruct. sessilib. and pedunc. oblongis acumin—woods of Europe near the Rhine, made once a shrubby var. of *Q. robur*, which has been properly divided into many, it is intermediate between the peduncled and sessile fruits having both: an akin quite dwarf with small acorns, called Hedge Oak in Alsatia is probably a distinct sp. the *Q. humilis* of Dec. fl. gallica. These Oaks once blended in *Q. robur* have calix campanul. 5fid. stam. 10, stig. 3, while others have many disparities in flowers.

64. *Quercus durinus* Raf. arborea, fol. latis ovatis sinuatis glabris, lobis rotundatis, fruct. subsess. solitaris—Durelin Oak of France, deemed a var. of *Q. robur* by the French botanists.

65. *Quercus nigrescens* Raf. arborea, fol. ovatis coriaceis vix sinuatis, subtus pubescens, fruct. solit. sessilib. cupulis verrucosis—in Europe deemed another var. of *Q. robur*, altho' of Sect. *Albicus* along with *Q. alba*, a var. has small acorns 2 or 3 together.

66. *Quercus repanda* Raf. *Q. alba* var. Mx. Arborea, fol. obovatis repandis, basi acutis, apice subobtusis, subtus glaucis sepe puberulis, fruct. longe peduncul.—very distinct sp. found from Pennsylvania to Carolina, often called white Chesnut Oak, leaves 3 to 5 inches long, 2 wide: probably an *Albicus* also, although I have not the fruit.

67. *Quercus fusca* Raf. ramulis costatis, fol. breve petiol. oblongis elongatis, basi acutis, apice obt. muticis, pinnatif. lobis ineq. obl. obt. vel retusis vel lobulatis, sinibus variabilis acutis obt. vel dilatatis, supra fuscatis lucidis, subtus

fusco-fulvis, nervis reticul. pubescens.—The Brown Oak of North America had also been blended with *Q. alba*, it is a fine tree, leaves largé 6 to 10 inches long, acorns I believe as in *Q. alba*.

68. *Quercus versicolor* Raf. arboresc. fol. petiol. oblongis glabris utrinque acutis, sinuato-serratis. sinubus falcatis, lobulis falcatis acutis apice callosis, supra nervis reticulatis, subtus concolor glabris—one of the sp. blended in *Q. prinus*, leaves 4 or 5 inches long, Carolina and Florida, found by Bartram and Kin, near to *Q. montana*. The name derives from the many colors of the decaying leaves in the fall.

69. *Quercus ferruginea* Raf. arborea, ramulis fuscatis angul. pubescens, fol. sessilib. pinnatif. sinub. obt. lobulis, latis ineq. subangul. cuspidatis, supra lucidis, subtus tomentosis ferrugineis—This Rusty Oak is perhaps blended with the Red Oaks, but very distinct, leaves about 3 inches long and 2 broad quite sessile. Florida and Georgia, Collins herb. collected by Baldwin, anonymous. Belonging to subg. *Cuspidicus*.

70. *Quercus nitida* Raf. frutesc. ramulis gracilis striatis fuscatis, fol. subsessilib. semper-virens rigidis nitidis, oblongis vel cuneatis, sinuato-dentatis undulatis, dentis paucis brevis mucronatis, utrinq. latere lucidis glabris reticulatis—Carol. and Florida, leaves 1 or 2 inches long, near to *Q. maritima* and *myrtifolia*, distinct from both by sinuate leaves, quite pretty and glossy. Is it a *Dryopsilis*?

71. *Quercus aurea* Raf. fol. petiol. cuneatis lyratis, basi acutis. apice trilobis, lobis obl. obt. ineq. muticis, utrinque latere glabris fulvis auratis, supra lucidis, subgranulatis, subtus reti-

culatis—in Arkansas and Texas, leaves 2 or 3 inches long, rather narrow, somewhat pandurate, with a golden gloss above. Golden Oak. Near to *Q triloba* of Mich. t. 26 which has been wrongly made a var. of *Q falcata* by some, but *Q triloba* has tomentose mucronate leaves, and besides sulcate fulvous nerves above.

72. *Quercus granulata* Raf. fol. longe petiol. longe lanceol. basi obliquatis acutis, apice attenuatis callosis, equaliter serratis, sinub. falcatis, dentibus callosis, supra fulvesc. lucidis granulatis, subtus glaucis glabris—akin to the Chesnut Oaks, and *Q. versicolor* 868, but very distinct by many characters, leaves 3 to 6 inches long, petiol over one. Arkansas and Texas.

73. *Quercus longifolia* Raf. fol. petiol. angustis lanceolatis longissimis, basi acutis, apice obtusis, repando serratis, dentib. remotis obt. supra lucidis subgranul. subtus pallidis glabris reticulatis—another fine Chesnut Oak, with long narrow leaves, 8 to 12 inches long, not 2 wide, petiol one inch. In the Alleghany Mts. discovered by Kin in 1802.

74. *Quercus pandurata* Raf. frutic. ramulis fuscatis subangul. fol. petiol. obov. panduratis vel 5lobis, basi acutis, lobis 2 inf. parvis, 3 superis obl. obt. muticis divaricatis supra glabris, subtus villosis concolor—Alabama, shrubby, akin to *Q. nana* and *lyrata*, but mutic leaves, small uncial, male fl. ament and calix pilose 5-6fid, stamens short 5 to 6.

75. *Quercus carpinifolia* Raf. fol. petiol. ellipticis, basi eq. obtusis, apice acum. obt. margine obtuse sinuato-dentatis, utrinque latere concolor glabris reticulatis—another Chesnut Oak, different from all, found in Virginia by Kin,

leaves ample and broad, often 6 inches long and 3 wide.

76. *Quercus acuta* Raf. fol. brevi petiol. obov. basi et apice acutis, pinnatif. sinub. sepe angustis acutis, lobis latis acutis nonnullis infra unidentatis, utrinque latere glabris concolor reticulatis—Cheroki Mts. or Unaka, found by Bartram, nameless in Collins herb. akin to *Q. ambigua* leaves six inches long.

77. *Quercus angulizans* Raf. fol. subsess. euneatis utrinque acutis, angulatis sinuatis, angulis remotis dilatatis integris alternis ineq. acutis callosis, utrinque latere glabris concolor reticulatis—Alabama, akin to the last, leaves 5 inches with a few broad distant angles, still nearer *Q. ambigua* if not the same, but there are other characters.

78. *Quercus mollis* Raf. fol. longe petiol. lato oblongis, basi acutis, apice obtusis, sinuatis subserratis, sinub. obt. dentibus. obtusis margine revolutis, supra lucidis, subtus fulvescens mollis tomentosis, nervis reticulatis—another Chesnut Oak discovered by Kin, different from *Q. prinus* with obov. acute callose leaves, this has them oblong 5 or 6 inches long, 2 or 3 broad. Mts of Pennsylvania,

79. *Quercus retusa* Raf. fol. petiol. obovat. basi acutis, profunde sinuatis, lobis paucis integris latis obtusis sepe retusis, utrinq. lat. concolor glaucescens glabris reticulatis—Alabama one of the White Oaks, leaves ample 5 or 6 inches long, 3 or 4 wide above.

80. *Quercus prinoides* Raf. frutex, ramulis angul. fuscatis, fol. petiol oblongis utrinq. acutis margine cartilagineo remote serratis, dentib. callosis, utrinque latere glabris reticul. subtus glaucis, fl. masc. 5fidis glabris 5andris, antheris

subsessilib. fruct. solit. sessilib. globosis, stig. 3
—a small shrub—4 to 5 feet high, in New Jersey and Virginia, leaves 2 inches long, one broad
Very different from *Q. chincapin* altho' usually blended, I add it to show the distinctions.

81. *Quercus chincapin* Mx. &c. prinoides Wild. Frutex ramulis teretib. striatis rufis, fol. petiol. obov. subobtusis, repando dentatis dentib. latis brevis callosis, supra lucidis granulatis, subtus glaucis glabris non reticul. fructib. geminatis in pedunc. bifloro, cupula depressa, stig, 3-lobo truncato—from New Jersey to Carolina.

82. *Quercus pagoda* Raf. falcata var. Elliot fol. longe petiol. oblongis utrinq. acutis, lobatopinnatif. lobis divaric. acutis mucronatis integris subtus pubesc. glans ovato—in Carolina, banks of streams and swamps, large tree, petiols 2 or 3 inchs long, leaves 4 to 6, lobes gradually lessening in size so as to resemble a pagoda.

83. *Quercus suberoides* Raf. 1808, New sp. 16. Arborea, cortice ramosa semi suberosa, ramulis fuscatis teretis ramosis, fol. perennis coriaceis sessilib. oblongis vel lanceol. utrinq. acutis muticis, margine revolutis subdent. dentib. ineq. remotis acutis callosis, utrinque latere glabris concolor fulvescens reticulatis—this American Cork-tree was shortly noticed by me ever since 1804 and published 1808 from a tree brought to Pennsylvania from Florida by Kin, leaves 2 inches long or less, narrow and thick. Very different from *Q. virens*, *maritima*, *cinerea* and akin with entire leaves, nearer to *Q. suber* and *ilex* of Europe. My specimen is from Florida found by Baldwin.

84. *Quercus ilexoides* Raf. Arborea, ramulis cinereis teretis rimosis, fol. obov. vel ellipt. sessilib. perennis coriaceis, apice vix acutis callosis,

margine revolutis parce dentatis, dentib. remotis brevis acutis callosis, supra fulvis lucidis rugosis, subtus glabris reticul. glaucis—akin to the last and to *Q. ilex*, Florida found by Baldwin, leaves biuncial or less, but one inch wide: probably a *Dryopsila*.

85. *Quercus smilax* Raf. *ilex* var. auct. fol. obl. lanceol. perennis coriaceis integris, subtus tomentosis—North Africa one of the presumed var. of *Q. ilex*. which has broader serrate leaves both are tomentose beneath: there are other var. *oblonga*, *angustif.* &c of *Q. ilex* that are not yet properly described, altho' probably distinct sp. compare *Q. canariensis* Brouss. W. en.

86. *Quercus corticosa* Raf. *suber* var. auct. fol. lanceol. perennis integris subtus tomentosis, cortice suberosa—sea shores of Spain, Sicily, Italy &c, one of the presumed var. of the Cork tree that has broader serrate leaves not perennial, and a thicker corky bark.

87. *Quercus heterophylla* P. Sm. E. B. &c. ramulis cinereis teretis rimosis, fol. subsessil. obl. vel. cuneatis vel lyratis, perennis coriaceis, integris vel irregul. subdent. acutis vel obtusis, margine revolutis, supra glaucis reticul. subtus fulvescens glabris reticul—I describe again this very singular Oak to compare it with the above akin, perhaps a deviation or hybrid of *Q. cinerea* or my *Q. ilexoides*. Florida, cultiv. near Philadelphia, found by Kin in 1801 at Cumberland Island Georgia.

88. *Quercus dilatata* Raf. ramulis sulcatis verrucosis, fol. subsessilib. lyratis dilatatis, basi acutis, lobis inf. parvis obt. superis latissimis quadratis retusis divaricatis integris, ultimo minor subtrilobo mutico, supra granulatis, subtus fuscatis lutescens pubescens reticulatis—near to

Q. lyrata, that has smooth angular leaves, also akin to my *Q. fusca* and *ferruginea*, but very peculiar by leaves as broad as long 3 to 5 inches &c. Alleghany and Apalachian Mts.

89. *Quercus heteroloba* Raf. ramulis sulcatis puberis, fol. petiol. lyratis pinnatif. basi acutis. lobis 3-7 divaric. inequalis obovatis vel dilatatis, 2-3lobulatis, lobulis obtusis retusis emarg. supra lucidis fuscatis, subtus rufo-fuscatis pubescens reticulatis—a small tree of the barrens of West Kentucky, disc. in 1818, medial between *Q. fusca* and *dilatata*, very distinct from *Q. obtusiloba*, leaves much larger 5 or 6 inches long, 4 or five broad, not two of them alike in their lobes.

90. *Quercus gonoloba* Raf. ramulis cinereis sulcatis corticoso-alatis verrucosis glabris, fol. petiol. pinnatif. basi acutis, sinubus obt. lobis alternis amplis angulatis dentatis, dentib. ineq. callosis obtusiusc. margine revol. supra granulatis pruinosis, subtus lutescens pubescens reticul.—a large tree of Kentucky, near to the above, leaves cut up nearly as in the Red Oaks but mutic, large 5 to 8 inches long, 2 or 3 wide, branches sometimes almost suberose.

This completes my new true Oaks, I have added 27 sp. whereof 22 North American to the long previous list, all which I have seen alive, or possess specimens of; but there are yet some other Oaks of next G. that will increase my new Oaks to 28; I have introduced in my accounts the characters derived from twigs, surface of leaves &c, the size, branches, flowers & fruits will afford other characters hereafter.

91. Subg? *DRYOPSILA* Raf. diff. *Quercus*, fl. masc. cal. 2-3phyl. membr. ineq. stam. 2, 3, 4, filam. filif. fl. fem. levis, stylis 2 reflexis filif.

stig. 2. Cupula levis non squamosa, nec tubercul. interdum tesselata—this section of Oaks with double styles will probably include many sp. when all shall be examined in bloom, two subg. 1 *Limnodris* cup quite smooth, leaves annual divided, type *Q. palustris* and probably other akin sp. 2 *Phellodryis* cup tessellate leaves perennial undivided; many types once all blended in *Q. phellos*, such as *virgens*, *sericea*, *maritima*, *laurif. imbricaria* and other mixt therein, also *Q. infectoria*, and probably *Q. cinerea*, *myrtifolia* and some others of which the flowers and fruits are not known; besides the following blended in *Q. imbricaria*, *laurifolia* and *virens*.

92. *Q. vel Dryops. aprica* Raf. Frut. ramulis sulcatis fuscatis non verrucosis, fol. subsessilib. lanceol. vel. obl. perennis, integris undulatis, basi acutis non obliq. apice cuspidatis, supra lucidis reticul. subtus glaucis tomentosus non reticul.—This is the Barren Oak of Kentucky, Missouri &c, a large shrub rather than tree, with leaves from 3 to 6 inches long, about one wide deemed *Q. imbricaria* by all.

93. *Q. vel Dryops. verrucosa* Raf. imbricaria auct. arborea, ramulis subangul. verrucosis cinereis, fol. perennis petiol. lanceol. planis integris basi acutis non obliq. apice cuspidatis, supra fulvis granulatis, subtus discolor glauco-fulvescens tomentosus non retic. fruct. pedunc. bifloris—Carolina to Louisiana, a tree very different from last by branches and leaves smaller always lanceolate.

94. *Q. vel Dryops. verrucosa* var. *obliqua* Raf. ut 93 sed fol. basi obliquatis ineq.—Florida. I can detect no other difference, even the

branches and fem. fl. are similar; it cannot be a sp. unless the acorns are different.

95. *Q. vel. Dr. laurina* Raf. laurif. var. auct. ramulis teretis. rugosis glabris fuscatis, fol. subpetiol. perennis oblongis obtusis muticis, basi acutis attenuatis, margine integro vix undulato, utrinque latere glabris reticulatis concolor glaucescens.—Florida Carol. &c. leaves large and thin 3 to 5 inches long, the real laurifolia has acute leaves. I have this tree under 3 names *Q. laurif. cinerea* and *virens*, being deemed by Kin a N. sp. and called the great leaf Live Oak. In this as in *Q. aprica* and *verrucosa* the acorns are subsquamose, yet the two styles are very evident: they form perhaps another subg. *Dryodaphnis* Raf. or Laurel Oaks.

96. *Q. vel. Dr. maritima* Raf. (an omnis auct? *virens* nonulis) ramulis teretis tomentosis, fol. sessilib. ellipt. vel obov. basi acutis apice obt. muticis, perennis coriaceis, margine integro revoluto, utrinq. latere glabris reticul. concolor glaucescens—Florida &c. leaves small uncial broad, distinct from *Q. marit. and virens* if their descriptions are correct.

97. *Q. vel Dr. cuneifolia* Raf. incana? Bartr. travels—ramulis teretis tomentosis. fol. petiol. cuneatis perennis coriaceis, basi acutis, apice obtusis mucronatis, marg. integro revoluto, supra lucidis levis vix granulatis non retic. fulvescens, subtus canis arcto tomentosis reticulatis—Florida, not at all agreeing with specimens, figures and descr. of *Q. virens* with elliptic acute leaves, see 99.

98. *Q. vel Dr. cinerea* Raf. (an omnis? auct. *Q. virens* nonulis) ramulis glabris teretis striatis fusco purpleis, fol. sessilib. ellipt. utrinque obt. apice mucronatis, perennis coriaceis, marg. in-

tegris subundul. supra glaucis reticul. subtus canis grabriusculis non reticul—also from Florida and Carol. the *Q. cinerea* of Nuttall not of all authors, how different from the othess! leaves 1 or 2 inches.

99. *Q. vel. Dr. virens* Raf. non omnis anct. arborea, ramulis teretis rimosis cinereis glabris fol. brevi petiol. perennis coriaceis oblongis ellipt. subcuneatis utrinque subacutis, undulatis integris vel subdentatis, dentib. ineq. supra glauco virens lucidis rugosulis, subtus canis glabris non retic—such is the real Live Oak of Florida to Louisiana, a large tree very different from many blended with it as yet, see the preceding and also *Q. suberoides* and *ilexoides*. Leaves 2 or 3 inches long.

100. *Q. vel Dr. oligodes* Raf. frut. ramulis teretis sulcatis fuscatis pulverul. fol. brevissime petiol. oblongis perennis coriaceis, basi rotundatis apice acutis. marg. revolutis integris vel parce dentatis, dentib. ineq. acutis supra virens lucidis rugosulis, subtus canis glabris non retic—very near to the last and to *Q. heterophyla*, but twigs unlike, leaves small uncial, with one to 6 teeth or none. It has been mistaken by some botanists for the *Ilex dahoon* when out of bloom, and I suspect the *Q. myrtifolia* and *Ilex myrsinites* have also been mistaken for each other—all the Live Oaks and akin such as my *Q. suberoides*, *ilexoides*, *heterophyla*, *nitida* &c, will probably form another subgenus *Finax* Raf. when the flowers will be described, which was not even done by Michaux nor Elliot, the cups are usually tessellate in most of them.

101. *BALANAULAX* Raf. diff. *Quercus*, fl . . . cupula verrucosa, glans sulcato—Types *Q. mo-*

luca, rumphi and other tropical Oaks of Australian and Meganesian regions, blended in *Q. moluca* L. see the figures of Rumphius; the sulcate acorns and tropical locality indicates a Genus, the flowers are not known: Thouars has asked if it is not rather a Laurel than Oak.

102. *CERRIS* Raf. diff. *Quercus* fl . . . cupula villosa fimbriata multifida sepe extus crinita—Types *Q. cerris* (*C. australis* Raf.) *austriaca*, *crinita*, *oliveformis*, *macrocarpa*, *microphyla*, *salicifolia*, *haliphleos* and the next.

103. *Cerris dulcis* Raf. a doubtful sp. slightly indicated in the travels of Lewis and Clarke, as growing in the Upper Missouri and Origen: a small tree 30 feet high, very branched, bark rough thick and pale, leaves small deeply sinuate as White Oaks, cup fringed, embracing half the acorn of a fine sweet taste, much liked by Deer and all wild Animals.

104. *PERYTIS* Raf. (around wrinkled) diff. *Quercus* fl. masc . . . fem. stylo brevis crasso, stig. 3, cupula levis concentrica sulcata vel rugoso annulata—Types *P.* or *Q. concentrica*, Lam. *glauca*, *annulata* Sm. *lamellosa* Sm. all Asiatic sp. of India and China, many others there probably.

105. *SCOLODRYS* Raf. diff. *Quercus*, fl . . . cupula muricata spinosa—Types *Sc.* or *Q. lyrata* and *rigida*, perhaps only a subg. but passage to next Genus. Name from thorny Oak.

106. *BALANOPLIS* Raf. (acorn armed) diff. *Quercus*, fl. monoicis vel sepe dioicis, masc. stam. 8, cupula globosa echinata semivalvata, 2-5valvis ut *Castanea*—A fine G. two Asiatic types.

107. *Balan. tribuloides* Raf. *Q.* do Sm. fol.

ovato lanceol. integris cuspidatis, cupula 2-3valvis—Nipal.

108. *Balan. serrata* Raf. *Q. cuspidata* Th. W. P. fol. ovatis serratis cuspidatis glabris, cupula 3-5valvis—Japan.

109. *ARCAULA* Raf. (n. ind.) diff. *Quercus*, Dioica, fl. masc. cal. villosa 4fido, stam. 8 longissimis, ovar. abortivo, fl. fem. stylo . . . cupula brevis squamosa—one type.

110. *Arcaula spicata* Raf. *Q. do Sm.* fol. ellipt mucronatis integris glabris, spicis axillaris—Nipal.

111. *ERIODRYS* Raf. diff. *Quercus*, Dioica, fl. masc. cal. camp. 5-6dent. stam. 5-6, antheris sessilib. fl. fem. . . cupula squamosa—akin to last by dioical fl. and also to the evergreen Oaks *Suber*, one type.

112. *Eriodrys lanata* Raf. *Q. do Sm.* ramis lanatis verrucosis, fol. ellipt. serratis subtus lanatis, fl. fem. axil. spicatis—Nipal.

113. *GARRYA* Dougl. Lindl. diff. *Quercus*, Dioica, cal. 4phylus, stam. 4. fem. cal. superus, 2dent. stylis 2, bacca 1loc. 2sp. *fol. oppos. amentis pendulis, bracteis connatis persistens cupuliformis.*—Singular G. very near *Quercus* and *Arcaula*, chief difference the adherent berry, but are not the bracts the real calix and cupula? the 2 teeth above ovary abortive styles? or accessory. Lindley would form a family *GARRIDES* of it, but it is only a subfamily—also akin to *Chloranthus*, *Henslevia* &c.

114. *Garrya elliptica* b. reg. 1686. frutex. fol. petiol. ellipt. undulat. mucronatis—California and Origen. Oaks are very scarce in those regions, altho' so common in Mexico and North America, and this G. appears to represent them.

In Michaux great work on the N. American Oaks, the male flowers of 10 sp. only are described or figured, and both the male and female of only one *Q. obtusiloba*, which has— fl. m. cal. camp. 5fid. stam. 5—fl. fem. ovario in cupula, exerto adherens coronato 5dentato (ut in *Garrya*) stylo conico, stigm. 3 divaric. obov. emarg.—The others have male fl. as follows

Cal. 4part. stam. 4—*Q. nigra*, *castanea*, *triloba*, *tinctoria*, *cinerea*.

Cal. 4-5part. stam. 4-5—*Q. phellos*, *virens*.

Cal. 5part. stam. 5—*Q. aquatica*.

Cal. 5part. stam. 5 ad 10—*Q. alba*, *prinos*.

FRAXINUS—ASHTREES.

115. **FRAXINUS** L. another G. now of 60 sp. with many anomalies, I divided it in 5 G. in my *New Sylva* see 728. Our 40 N. Amer. Sp. have been fixed by Lamark, Bosc, Robin &c, but neglected by other botanists, and I will now give here their synopsis, although much remains to be done in describing the flowers of all. These G. with *Ornanthes*, *Chionanthus*, *Forestiera*, *Carpoxis*, *Nudilus* &c form the types of family **FRAXINIDES**. The real G. **FRAXINUS** has neither calix nor corolla. The types are the European and Oriental sp. *Fr. excelsior*, *verrucosa*, *aurea*, *heterophyla*, *oxiphyla*, *argentea*, *parvif.* *lentiscif.* *oxicarpa* &c. Those with simple leaves form my G. or subg. *Aplilia* Linneus had only 3 sp. and his *Fr. americana* blended 20 or 30, such was once the perfection of Botany! *Fr. sambucifolia* is the only Am. sp. stated to have no calix and thus a real *Fraxinus*, but others will be found so probably. See till 172.

16. **LEPTALIX** Raf. n. fl. 730, diff. *Frax.* fl.

dioicis, cal. 3-5fidis persistens, &c.—Types Fr. *caroliniana*, *acum. pubesc. juglandif.* and most of the N. Amer. sp. if not all; but Bosc has not noticed if the calix exists in his 16 new Sp. which I now add, with all the Amer. Sp. to compare.

117. *Frax. vel. L. longifolia* Bosc. Loudon. ramis hirsutis, foliolis 7 obl. lanceol. acum. integris, supra lucidis, subtus toment. petiolis pubesc.—North America like all the following and chiefly in Southern States.

118. *Frax. L. mixta* B. L. foliolis 11 oblongis subsess. ineq. dent. glabris, nervis supra pubescens.

119. *Frax. L. viridis* B. L. ramis viridis, foliol. 7 obl. acutis serratis, supra lucidis, subtus nervis pubescens.

120. *Frax. L. cinerea* B. L. gemulis linearib. cinereis villosis, foliol. 7 lanceol. glabris ineq. dent. subtus nervis puberis.

121. *Frax. L. alba* B. L. ramis cinereis, foliolis, lanceol. petiol. ineq. denticul. subtus et petiol. hirsutis.

122. *Frax. L. pulverulenta* B. L. foliolis 13 longe petiol. obl. acutis subsinuatis subtus puberis, petiolis pulverulentis.

123. *Frax. L. rubicunda* B. L. foliolis 7 obl. acutis coriaceis subdent. subtus puberis, petiolis et nervis rubicundis.

124. *Frax. L. ovata* B. L. gemulis rufis, foliolis 7 ovat. acut. equaliter dent. subtus pubescens. Compare 157.

125. *Frax. L. richardi* B. L. ramis cinereis villosis, foliolis 7 obl. acut. dent. glabris, subtus nervis puberis.

126. *Frax. L. elliptica* B. L. ramis atrofusca-

tis, gemulis rufis, foliolis 7 obl. ellipt. mucron. subdent. subtus villosis.

127. *Frax. L. nigra* B. L. (not of Marshall) ramis atratis, foliolis 7 obl. acutis subsinuato dentatis glabris.

128. *Frax. L. fusca* B. L. ramis fuscatis, foliolis 7 obl. mucron. eq. serratis, supra glabris, subtus villosis.

129. *Frax. L. rufa* B. L. foliolis 5 lanceol. acum. cuspid. ineq. dent. subtus rufo villosis.

130. *Frax. L. pallida* B. L. ramis lutescens, foliolis 7 ovatis lanceol. subsess. dent. glabris.

131. *Frax. L. nana* P. W. B. L. frutescens, ramis cinereis, rachis basi alatis, foliolis 7 obl. acum. glabris dentatis—also in Persoon, shrub 6 feet high. Is *Fr. nana* of Wild. En. the same? it has brown buds, folioles ovatoobl. unequal, serrulate, entire at base.

132. *Fr. L. glauca* Raf. americ. W. auct. novanglia Mill. Pennsylv. Marsh. latifolia Pers. gemulis lutescens, foliolis obl. acumin, integris, 7-9 supra lucidis, subtus glaucis, fruct. basi acutis angustis cuneatis. This and the next are usually blended and called White Ash, both have a calix and are real *Leptilix*.

133. *Fr. L. acuminata* Lam. Loud. auct. concolor Mx. Amer. Mg. gemulis rufis, foliolis 7-9 obl. acnm. glabris concolor subdent. nervis villosis, fruct. latis lanceol. basi teretis.

134. *Fr. L. epiptera* Vahl. Mx. auct. gemulis fuscatis, foliolis 7-9 ovato lanceol. acum. glabris subserratis, nervis crassis, fruct. pedic. cuneatis obt. emarg. basi teres—Swamps of Carolina, fl. with a calix, compare it with my *Fr. retusa* 140.

135. *Fr. L. expansa* W. Loud. ramis glabris gemulis fuscatis, foliolis 11 petiol. ovatoobl. ineq.

serratis glabris—compare Fr. *multifolia* 153 with sessile folioles.

136. Fr. *L. mollis* Raf. rachis teretis rufo villosis, foliolis 11-15 sessilib. ovatis acutis grosse serratis, utrinque tomentosus supra rugosis, subtus pallidis—sent me from Alabama, folioles 2 or 3 inches long, upper narrower a little oblique, odd with base acum. sessile.

137. Fr. *L. pannosa* Vent. Loud. foliolis 7 petiol. ovatis integris, supra lucidis, subtus villosis—Not well distinguished.

138. Fr. *L. reticulata* Raf. rachis angul. puberis, foliolis 5 subsess. lanceol. obliquatis integris, acumin. glabris, subtus pallidis retic. impari petiol. rhomboidea major utrinq. acum. fruct. calic. ang. lanceol. acutis basi attenuatis Virginia, near to *L. glauca*, folioles 3 to 4 inches long.

139. Fr. *L. cordata* Raf. foliolis petiol. ovatis ellipt. integris, basi subcordatis, apice attenuatis obtusis. supra reticul. glabris lucidis, subtus glaucis pubescens—very distinct sp. from Florida, disc. by Kin, large folioles 4 to 6 inches long 2 or 3 broad.

140. Fr. *L. retusa* Raf. ramulis teretis cinereis pubescens, rachis puberis striatis, foliolis 5 brevi petiol. ovatis vel ellipticis integris acutis vel retusis, supra nervis puberis, subtus concolor pubescens, nervis albo marginatis distichofimbriatis. fruct. calic. elongatis retusis emarg. basi cuneatis—New Jersey &c leaves small 1 or 2 inches, fruits narrow 2 inches long.

141. Fr. *L. porosa* Raf. ramulis teretis glabris rimosis fuscatis, rachis teretis pubesc. foliolis 5-7 petiol. ovatis vel lato ellipt. integris, basi acutis, apice brevi acum. obt. supra lucidis porulosis, nervis sulc. puberis, subtus pallidis,

pubesc. fruct. panic. pubesc. calic. subovatis planis, alis brevis acutis—very singular sp. one of the few of which I have the flowers. On the banks of Delaware and Susquehannah R. (*riparia* would be a good name if others are porose) folioles 3 to 5 inches long, fem. fl. commonly pedicels ternate lax pilose, calix camp. unequally 3-4fid, ovary sessile ovate flat, style long deciduous stigmas 2. This will be perhaps type of a subg. *PLATONEUS* Raf. with the next, *platicarpa* and akin sp.

142. Fr. *L. lancifolia* Raf. diff. 941, rachis planis, foliolis sepe 5, lanceol. longe acum. obtusiusc. marg. subrepandis, supra non porosis, nervis non sulcatis, subtus concolor nervis disticho-pubero-marginatis ut 140—akin to the last same flowers and fruits, branches and leaves, but these shorter narrower. All the above trees are quite distinct from the presumed var. of Fr. *platicarpa* by their entire leaves. Alleghany Mts.

143. Fr. *L. platocarpa* Mx. auct. nigra? Marsh. foliolis 7-9 subsessil. ovalib. serratis, fruct. lato lanceol—such is the sp. of Michaux, but others are meant by Elliot, Willdenow &c. Fr. *nigra* Marshall has 9 folioles and the fruit elliptical.

144. Fr. *L. palustris* Raf. platic. El. foliolis 7 ovatis lanceol. acutis, petiolatis, serratis subtus pallidis, nervis crassis puberis fruct. lanc. ellipt. emarg.—Swamps of Carolina.

145. Fr. *L. pleurodes* Raf. platic. W. P. Loud. &c. foliolis 7 subsess. lanceol. extus latere serratis, fruct. lanc. ellipt—apparently distinct from all by leaves serrate on one side only.

146. Fr. *L. canaliculata* Raf. rachis gracilis glabris canaliculatis, foliolis 7 subsessilib.

utrinque acutis glabris, apice serrulatis, supra nervo medio canalicul. subtus pallidis, foliol. infimis ovatis, 4 superis obl. ellipt. terminalis rhomboidea—very distinct from all, although deemed *Fr. platic* by Collins, folioles very small uncial, probably a *Platoneus*.

147. *Fr. L. caroliniana* W. auct. ramis glabris, gemulis fuscatis, rachis semiteres supra planis, foliolis 7 petiol. ovato lanceol. basi acutis, apice serrulatis acum. obtusiusc. supra nitidis nervis sulcatis, subtus glabris glaucis.—My specimens apply to the description of authors, a true *Leptalix*, rocky hills, leaves 2 or 3 inches.

148. *Fr. L. teres* Raf. rachis teres levis rufescens, foliolis 7 petiol. lato ovatis brevi acum. media ad apice subcrenatis obtuse serrulatis, supra glabris nervis sulcatis, subtus puberis glaucis—perhaps the *latifolia* of some, blended in *Fr. pubescens*, but many important characters. leaves 2-4 inches long, broadly ovate. Alleghany Mts. In this as most of the sp. blended in *Fr. pubescens*, the fl. are really dioical, calix 5fid, anthers 2 to 4 subsessile acute.

149. *Fr. L. pubescens* Walt. W. auct. tomentosa Mx. nigra? Duroy—ramulis toment. foliolis 7-9 ovatoobl. petiol. serratis, subtus et petiolis toment. fruct. obl. lanc. emarg.—To this many have been united as var. that are real species probably, for *longifolia* see 117.

150. *Fr. L. media* Raf. subpubescens Pers. diff. 149, rachis glabris, foliolis subsess. ellipt. obl. acum. serratis, subtus puberis—certainly distinct, compare it to *Fr. fusca* and *rubicunda*.

151. *Fr. L. juglandifolia* W. auct. americana Vang. ramulis glabris, gemulis fuscatis, foliolis 7-15 petiol, ovatis serratis, subtus glau-

eis, nervis ad axillis pubescens—a true Leptalex.

152. Fr. *L. repanda* Raf. rachis teretis glabris, foliolis 7 petiol. ovatoobl. acum. repando crenatis, utrinque glaucescens glabris, supra nervis sulc. subtus subretic. ad axillis villosis—near the last, and also akin to Fr. sambucif. is it a Leptalex? leaves large 3 to 5 inches long.

153. Fr. *L. multifolia* Raf. rachis glabris semiteres supra planis, foliolis 11-15 omnis sessilib. obl. vel. lato lanceol. utrinque acutis, ineq. serrulatis, concolor glabris, nervo medio supra sulcato, subtus ciliato—seen alive akin to Fr. *expansa* 935 and Fr. *mixta* 918, but leaves not dentate really sharply serrulate, 2 or 3 inches long, twigs thick terete rimose, male fl. in short dense panicles, no calix, filaments or pedicels ramose, 1-3 anthers sessile curved linear acute. Is it a real Fraxinus? are fem. fl. caliculate?

154. Fr. *L. 4angulata* Mx. auct.—ramis glabris 4gonis, gemulis cinereis, rachis semiteres, supra planis foliolis sepe 7 brevi petiol. ovatoobl. acum. serratis, basi rotund. vel subcord. supra pallidis glabris, subtus glaucis, nervis pubescens—I describe this again as seen alive and on my specimens, folioles 3 to 4 inches long, decreasing upwards instead of increasing. My Fr. *cordata* differs by entire leaves reticulate obtuse &c.

155. Fr. *L. atrovirens* Pers. foliolis sessil. ovatis acum. serratis undulatis, basi subobliquis subtus basi villosis. Is it Fr. *viridis* of Bosc?

156. Fr. *L. undulata* Raf. fl. lud. foliolis 7 ovatis acum. integris undulatis, supra lucidis, snbtus glabris—Louisiana, akin to last, leaves 4

inches by 2. It has a var. *latifolia* with shorter leaves less acuminate.

157. Fr. *L. grandifolia* R. discolor fl. lud. 106 non Mx. nec alis—rachis teretis, petiolis sulcatis, foliolis sepe 7 ovatis acumin, denticul. amplis, supra atrovirens, subtus tomentosus canis—Louisiana, large tree over 60 feet high, wood brittle, folioles very large 8 inches long 3 broad: akin to Fr. *ovata*, *teres* and *pannosa*.

158. Fr. *L. lacera* R. fl. lud. 108. Rachis filiformis glabris, foliolis 3-5 sess. ovatis acutis glabris ineq. dentato laceris vel extus laciniatis, ultima subtriloba—Louisiana, tree of 40 feet, wood compact, branches slender, leaves small and thin.

159. Fr. *L. obliqua* Raf. rachis depressis glabris, foliolis 9 sessilib. infimis et ult, petiol. obliquis lanceol. acum. extus medio grosse serratis, intus vix serratis, supra subreticul. subtus glaucis glabris—found in Arkansas by Nuttall, near to last, leaves also thin, but 3 inches long, the last is not obliqual and has a petiol, with teeth on both sides, while others have only one or two on their upward side.

Those with the next G. make 44 sp. of N. Am. Ash trees, whereof 18 have been well ascertained as new ones by myself, as many as Bosc had. No doubt that in this G. as in *Quercus*, *Salix* and others dicline trees, many are hybrid or casual deviations, having assumed gradually specific forms and characters.

I have just seen alive and obtained the seeds of the Fr. *longifolia* 117 or a very akin sp, which I will describe at length—ramis fuscovirens pubens, petiol. subter. pubens, foliolis sepe 7 obl. lanc. acum. integris undulatis, supra lucidis, subtus virens pubens reticulatis: cal. fem.

tubul. ineq. 3-5dent. sem. teretis linearib. ala angusta obtusa vel retusa.—If different by leaves not tomentose, it may be called *Fr. virens*, folioles 3 to 5 inches long, one broad, racemes of seeds compact pubescent, but seeds smooth.

160. *SAMARPSES* Raf. n. fl. 733, diff. *Fraxinus*, calix minimo 3dent. Stam. 3, samara obovata 3gona 3alata.

161. *Samarpses triptera* Raf. *Frax.* do Nut. El. Eat. foliolis sepe 7 obov. integris subsess. obliq. subtus pallidis villosis, nervis glabris—Carolina.

162. *APLILIA* Raf. n. fl. 732. G. or Subg. of *Fraxinus* diff. by simple leaves, flowers probably different but undescribed. Several sp. once blended in *Frax. simplicifolia*! or even a var of *Fr. excelsior*! I shall describe three.

163. *Frax. Apl. macrophyla* Thouin. Loud. folia simplex. ovata grosse serrata bullata, atrovirens, glabra—deemed native of N. America, but locality unknown, cult. in Europe.

164. *Frax. Apl. pendula* Raf. ramis pendulis, fol. sepe simplex, nonulis ternatis, serratis—blended with *Fr. heterophyla*, which perhaps also belong to this G. by flowers.

165. *Frax. Apl. laciniata* Raf. ramis teretis pallidis, gemulis atratis, petiolis elong. lutescens canalic. fol. simplex ovato subrot. serrato laciniatis, lac. serrulatis acutis, utrinque glabris, pallide virens—Europe, seen alive and now described from specimens, petiols 2 inches long, leaves firm 3 to 4 inches long.

166. *ORNANTHES* Raf. n. fl. 731. *Ornus* Pers. diff. *Fraxinus* calix 4fid. petalis 4 linearib. Stam. 2 fil. filif. stylo, stig. bifido.—Fine G. flowers as in *Chionanthus*, fruit as *Fraxinus*. *Ornantes*

means flowering Ash, 4 types all blended in *Fr. ornus*.

167. *Ornanthes florida* Raf. ramulis fuscatis teretis glabris, rachis canalic. foliolis 5-7 petiol. lato lanceol. acutis subobliq. crenatis, utrinq. reticul. glabris panic. corymbosis—Mts. of Germany and Greece, folioles 2 inches long, odd one oblong equal, fine dense panicles of large white flowers, half size of *Chionanthus*. In my herbarium like all the others: and all producing Manna? This is *Fr. ornus* of Sm. and *flora greca*.

168. *Ornanthes parviflora* Raf. ramulis angulatis glabris pallidis, rachis semiteres, foliolis 7 subsess, ovatis, ultimo obovato, subacum. ineq. serratis, utrinq. concolor reticulatis glabris—very distinct, small leaves uncial, flowers half size of last in larger panicles, Apenines of Europe. I cannot extricute the synonyms of this species.

169. *Ornanthes lutea R. americana* auct. ramis lutescens subverruc. gemulis atratis, rachis canalic. foliolis 5-9 sessilib. serratis glabris subrot. ovatis vel obov. nonulis obliquis, vix acutis vel retusis non acum. supra lucidis retic. virens subtus glaucis reticul.—also very distinct, leaves small uncial unequal in size and shape, the upper larger, seldom obcordate as stated by Persoon &c. Alleghany Mts. small shrub 3 to 4 feet high, seen alive not in bloom. Perhaps not *O. americ.* of Pursh.

170. *Ornanthes rotundifolia* Raf. Frax. do Mill. Ait. Sm. Pers. &c gemulis cinereis foliolis 9-11 subrot. ovatisque acumin. duplicato serratis subsessilib.—Not well described so as to compare better, leaves small, of Europe, deemed the Manna Ash by many, like the others;

all very distinct from the Manna Ash of Calabria which is the next real *Fraxinus*.

171. *Fraxinus mannifera* Raf. rachis teretis, foliolis 7-9 ovalib. integris glabris, ultima major—a small tree, of South Italy, with white spotted bark, growing on rocky hills, loosely described by many as the Manna Ash of Calabria, but well ascertained to have no petals and to be a true Ash, but is it not a *Leptalex*? with greenish blossoms in panicles, length of leaves twice the breadth.

172. *Fraxinus sambucifolia* Lam. auct. nigra Marsh, Duroy? ramis nigro punctatis, foliolis sessilib. ovato lanceol. serratis rugosis, lucidis, basi oblique rotund. subtus nervis ad axillis villosis fruct. linearib.—I conclude my long account and monograph of American Ashtrees by this, stated to be N. American, and a real *Fraxinus* fl. polyg. without calix called Water Ash like many others, the names of white, black, blue, grey, swamp &c, Ash trees are often indifferently given to various kinds, and even this is the white and black of some.

POPULUS or POPLARS.

173. *POPULUS* L. auct. This G. hardly differed from *Salix*, except by habit of broader leaves? what was called the corolla of flowers is merely a larger nectary or real perigone. Meantime the flowers of but few Poplars have been described, those that were, have been found to vary as much as those of Willows, and must therefore form also many Genera or subgenera; but it is impossible to refer all the sp. to them, I have myself neglected the study of those flowers when found, because deemed well known, which was not the fact. I must there-

fore merely indicate some of the needful sections of this Genus which I shall still keep entire till better studied in floral times.

174. *Populus* R. *stam.* 8 to 20, *stigmas* 4.—Types *P. alba* and *nigra*, with all the sp. protem with the flowers undescribed.

175. *Tremula* R. *stam* 8. *stig.* 4 *auriculatis*—*P. tremula* and *trepida*, with other Aspentrees.

176. *Octima* R. *stam.* 8, *stig.* 8—Type *P. canescens* &c.

177. *Aigiros* R. (n. grec) *stam.* 8-24, *stigma* unicum. 4-Globum—most of the American sp. in *P. heterophyla* the stamens are 20-24.

178. *Monilistus* R. *stam.* 12, *stig* unic. 4fidum, *capsulis* moniliformis—Type *P. monilifera*.

Our American sp. require revision also, as many have been blended, and I will notice 6 such N. sp. or var. of my Herbarium.

179. *Populus bicolor* Raf. *ramulis* teretis *rugosis* *subverrucosis* *apice* *angulatis*, *petiolis* *semiteres* *tomentosis*, *fol.* *parvis* *ovatis* *obtusis* *sinuatis* *repandis*, *supra* *reticul.* *fuscatis*, *subtus* *glaucis* *vel* *canis*, *junioribus* *tomentosis*—very distinct sp. leaves 1 or 2 inches long, petiols rather shorter, in the Alleghany mts. young leaves quite white beneath.

180. *Populus cinerea* Raf. *ramulis* *subangul.* *flexuosis* *subtoment.* *petiolis* *compressis* *villosis*, *fol.* *ovatoblongis*, *vix* *cordatis*, *acuminatis*, *calloso* *denticulatis*, *supra* *retic.* *glabris*, *subtus* *tomentosis* *cinereis*—also in the Alleghany Mts. leaves large 3 to 6 inches long. Very different from *P. candicans* or *latifolia* with larger broad cordate leaves white beneath.

181. Var. *reticulata* R. *diff.* *fol.* *ovatis* *non*

cordatis, remote denticulatis, utrinque latere reticulatis.

182. *Pop. candicans*, var. *crenata* diff. fol. subcord. obtusis et obtuse crenatis, subtus cinereis ut in *P. cinerea*.

183. *Populus ciliolata* Raf. greca W. balsamif. v. latif. nonnullis—ramulis angul. rugosis glabris, petiolis pubescens fol. glabris latovatis vel subcordatis acumin. margine ciliolatis, crenato uncinatis, subtus lutescens venosis retic—Mts. Allegh. Ohio &c, leaves 3 to 6 inches broad and long, nerves yellowish, very singular by a close short pubescence on the margins only: Miscalled Athenian Poplar by some although a real American sp. not at all grecian as supposed by Wildenow. The capsules are rugose, stigma 4lobe, thus an Aigiros.

184. *Populus reticulata* Raf. petiolis depressis fuscis, fol. ovatis acutis, basi emarg. remote serratis, utrinque glabris nervoso reticul. concolor—Apalachian Mts. petiols rather short uncial, leaves 4 to 6 inches long, 3 or 4 wide. Apparently near *P. levigata* which differs by rounder leaves acuminate glandular at base and petiols compressed.

There are other Poplars not well described; but merely indicated by various authors, of which I will mention two.

185. *Populus salicifolia* Raf. fol. lanceol. acum. subintegris—the Willow Poplar of Upper Missouri and Origen, mentioned by Lewis 30 years ago.

186. *Populus biformis* Raf. fol. ineq. allophyllis, lanceol. vel. cordatis mixtis—the Gharab of Euphrates R. lately mentioned by Ainsworth.

TILIA or LINDEN-TREES.

187. This fine and useful Genus is nearly natural altho' divided in two subgenera; but the sp. only 2 in Linneus and now a dozen, are not yet well distinguished, notwithstanding the labors and monographs of Ventenat, Michaux, Smith, Decandole &c, and there are yet some unnoticed or blended kinds, of which I will now describe 8 before me.

188. Subg. *NEPARA* Raf.—stam. conformis—Types all the sp. of the old continent *T. europea*, *corallina*, *parvifolia* &c, see Smith.

189. Subg. *FILURA* Raf. *stam. 5 petaliformis*—all the American sp. except *T. alba*, which is oriental, the American sp. of same name is very different, perhaps my *glauca* or *fulva*.

190. *Tilia crenata* Raf. *petiolis teretis brevis*, *fol. ellipt. cordatis, vix obliquatis, longe obtuse acumin. inequaliter crenatis, utrinque glabris concolor, nervis axilis villosis*—a very distinct sp. with large leaves 6 inches long, 4 broad uncial petiols, the crenatures are unequal and often mucronate. Mts. Oregon, brought by Lewis and Clarke, seen alive in gardens, not in bloom.

191. *Tilia longifolia* Raf. *petiolis semiteres elong. fol. ovatoblomis elongatis, basi obliquis dimidiatis, apice longe acute acumin. margine cuspidato-serratis, supra glabris reticul. subtus glaucis glabris, nervis paralelis, axilis villosis: bracteis angustis cuneatis ad cymis longior obt. acum. petalis ovatobl. obtusis*—another remarkable sp. found in Arkansas by N. leaves narrow large thin, 6 to 8 inches long, 3 to 4 wide, petiols 2 or 3 inches long, one side truncate, another transversal dimidiate with only 2 lateral nerves, while 3 on the other side, bracts reticulate on both sides as in all American species.

192. *Tilia glauca* Raf. ramulis rugosis fuscatis, petiolis subteretib. fol. ovatis brevi acum. basi oblique truncatis, margine cuspidato serratis, supra levis vix reticul. subtus glaucis, nervis parallelis axilis villosis; bracteis cuneatis obt. vel. emarg. cymis equante, petalis ovatobl. obt. —Mts. Alleghany, akin to last, but petiols and leaves shorter broader, sometimes as broad as long 3 to 4 inches, nerves similar.

193. *Tilia fulva* Raf. petiolis teretib. fol. ovatis et subellipt. basi oblique truncatis vix emarg. apice breve acum. margine uncinato-serratis, supra fulvis, rugosis, subtus canis glabris subreticul. axilis villosis, bracteis pedunc. cuneatis obt. ad cymis paucifloris brevior—banks of R. Ohio and other streams, deemed *T. heterophylla* by Collins, but leaves similar, not tomentose, ample 4 to 6 inches long, 3 to 4 wide petiols commonly biuncial. Is it the *T. alba* of Mx?

194. *Tilia fuscata* Raf. ramulis rugosis fuscatis, petiolis elongatis filif. fuscis, fol. subrot. cordatis vel renif. vel. truncatis vix acum. vix obliquatis, margine uncinato serrulatis, supra rugosis fuscatis, subtus virescens glabris, axilis villosis; bract. cuneat. obt. ad cymis multifi. equante—Mts. Alleghanies and Virginia, quite heterophyllous altho' not tomentose, nearer *T. pubescens*, but perfectly glabrous, leaves small 2 or 3 inches long and wide, petiols nearly as long.

195. *Tilia riparia* Raf. ramulis rugosis fuscatis, petiolis mediocris temiteres, fol. subrot. basi renif. subcord. vix obliq. apice abrupte acum. marg. cuspidato-serratis, supra levis vix reticul. subtus subconcolor glabris, axilis villosis; bract. subobl. obt. ad cymis multifi. brevior, pe-

tal^{is} ovatoobl. obt.—From Canada to Virginia near streams. Probably the *T. americana*, *glabra*, *canadensis* of authors, names all erroneous. Leaves coriaceous about 3 inches long and wide, bracts often repand or elliptical, shorter than the flowers, 12 to 20 on the cymes.

199. *Tilia cinerea* Raf. ramulis rugosis verrucosis cinereis, petiolis elong. sulcatis, fol. ovatis et subrot. basi truncatis vel renif. vix obliq. acute acum. margine cuspidato serratis, supra reticulatis pallidis, subtus levis glabris cinereoglaucis, axillis villosis; bracteis angustis elongatis obt. vix cuneatis ad cymis paucifl. longior—in Kentucky and Alabama, very distinct by greyish branches and foliage, besides warts &c. petiols biuncial, leaves 3 or 4 inches long and wide rather firm, some bracts 6 inches long.

197. *Tilia umbellata* Raf. ramulis rugosis rubescens. petiolis elong. filif. fol. subrot. dilatatis sepe truncatis acuminatis, vix obliquatis, margine serrulatis, supra levis. subtus glaucis glabris, axillis villosis; bracteis sepe peduncul. cuneatis obtusis ad cymis 5-7fl. umbellatis subequante, capsulis fulvo villosis—Alleghany Mts. leaves smaller than in any other 1 or 2 inches long and broad, flowers almost in umbels, very few, capsules globular very hairy. Is this the *T. pubescens* of some authors? but leaves quite smooth, although axils of nerves villose as in all that I have seen. The real *T. heterophylla* I yet lack, but my 8 sp. are well distinguished and defined, although it would be a task to verify the synonymies. There is another doubtful sp. which I have not seen.

198. *Tilia stenopetala* Raf. fl. ludov. 304, fol. obliquis glabris, denticulatis, petalis oblongis acutis integris—Louisiana, the acute petals &

dentate leaves appear important. Robin says it is a large tree 60 feet high, 2 in diameter, flowers small but very fragrant. It is perhaps the *T. pubescens* var. *macrophylla* of Smith, which he states to have acute petals. The real *T. laxiflora* has emarginate petals.

199. **HEBOKIA** Raf. diff. *Sambucus*, ovar. liberum superum, stylo filif. stig. capitatum—certainly a very peculiar G. not even of family **SAMBUCIDES**, (a branch of **VIBURNIDES**) but belonging to my family of **ILEXIDES**, subfamily **LYCIOIDES**. The name is derived from the Japanese.

200. *Hebokia japonica* Raf. *Sambucus* do Thunb. auct.—foliolis 7-15 ovatis acutis serratis glabris, margine cartilagineo; cymis trifidis—Japanese shrub.

SAMBUCUS or ELDERS.

201. This natural Genus of trees, shrubs and plants, had once only 4 species, each containing 2 or 3, and I will now give a concise monograph of a dozen kinds, whereof 7 Americans, divided in 2 subgenera, all seen alive and now in my herbal except *S. cerulea*.

202. Subg. **EBULUS** Raf. florib. cymosis.

203. Subg. **OLMA** Raf. florib. thyrsoides.

204. *Samb. E. repens* Raf. rad. repens, caulib. fruticosis virgatis, foliolis 5-7 glabris exstipulatis subsessil. ovatoobl. acum. serratis, basi integris vix obliquatis, ultima petiolata basi cuneata, subtus glaucis; cymis pedunc. nudis 5fidis, baccis atropurpureis—usually blended with the next as *S. canadensis*, both found from Canada to Louisiana; this is smaller, with smaller leaves, fewer flowers, berries nearly black.

205. *Samb. E. bipinnata* Raf. *canadensis* L.

auct.—frutex ramosus, fol. bipinnatis, foliolis 11-17, sepe stipulatis, infimis binis ternisque ineq. petiolatis, pet. hirsutis. lateralis sess. ovatis, terminatis obovatis, omnis ciliolatis, argute serratis abrupte acum. subtus glabris, pallidis; cymis pedunc. 5fidis sepe bracteolatis, baccis purpurascens—a large shrub 8 to 16 feet high, very distinct by stipules, ciliate leaves, the lower folioles always ternate or binate, very ample cymes and berries not quite so black.

206. *Samb. E. humilis* Raf. annals 100 (non M) caule herbaceo pedalis, flexuoso simplex, foliolis 5 subsess. ellipt. serratis acum. glabris, impari petiolata major; cyma unica quinquefida, bracteis 2 lanceolatis—discovered on the banks of Ohio in 1818 described in 1820, leaves large for such small plant, flowers white as in all the akin, I did not see the berries, root not creeping.

207: *Samb. E. cerulea* Raf. frutex, fol. pinnatis, fl. cymosis, baccis pallide ceruleis—mentioned by Lewis and Clarke trav. 2. p. 160, as growing near Oregon Mts. must be better described; but the blue berries are quite peculiar.

208. *Samb. E. nigra* L. auct. Arborea, ramulis levibus, foliolis 5, petiolis puberis, ovatis serratis acum. vix obliq. subtus glaucis glabris, cymis pedunc. 5fidis, baccis nigris—the common Elder of Europe, from which the next must be distinguished.

209. *Samb. E. alba* Raf. Arborea, ramulis verrucosis. foliolis 3-5 subsess. ovato lanceol. acum. serrulatis glabris subsess. subtus concolor impari pet. oblonga; cymis sessilib, nudis, baccis albis—the white Elder of Europe was very improperly blended, having many striking

characters now well contrasted, the cymes have fewer flowers, the berries are not so round.

210. *Samb. E. ebulus* L. auct. herbac. foliolis 7-9 glabris lanceol. serrat. acutis concolor, cymis trifidis—2 or 3 sp. are also blended here, the African, European and Asiatic must be examined again. I will describe one that I possess.

211. *Samb. ebuloides* Raf. herbac. foliolis 11-15 petiolatis glabris, lanceol. obliquis acutis serrulatis concolor, infimis auriculatis vel ad basis foliolis parvis munitis, petiolis glandulosis; cymis trifidis—In South Europe, blended with last by authors, leaves subbipinnate as in *S. bipinnata* probably the *S. humilis* of Miller.

212. *Samb. E. laciniata* Retz &c. Arborea, fol. bipinnatis, foliolis lanceol. laciniatis; cymis 3-5fidis—a beautiful distinct European sp. once deemed a var. of *S. nigra*! cultivated with us as the Parsley Elder, a tree 12 feet high.

213.—*Samb. O. racemosa* L. auct. Arborea, ramis levis foliolis 3-5 petiol. ovatoobl. acum. eq. serrulatis glabriusculis concolor vix obliq. thyrsis ovatis, baccis flavis—small tree of Mts. in Europe, with whom some botanists would blend the next. Flowers ochroleucous.

214. *Samb. O. verrucosa* Raf. pubens Mx. ramis verrucosis, foliolis 5-7 subsessilib. obliq. lanceol. acum. equaliter serrul. subtus fuscatis pubens, impari petiol. oblonga; thyrsis ovatis, baccis rubris—Alleghany Mts. shrub. 3 to 6 feet high, flowers rubescent, berries handsome.

215. *Samb. O. dimidiata* Raf. ramis levib. foliolis 5-7 sessilib. obl. acum. ineq. serratis, basi obliq. dimidiatis, subtus glabris pallidis, impari petiol. thyrsis ovatis, baccis rubris—Canada and highest Mts. Catskill Mts. &c.—

This is medial between the 2 last, nearest to *S. racemosa*, not having warts, but the leaves are narrower with larger unequal teeth, and almost dimidiate at base, branched shrub 3 to 4 feet high.

216. *Samb. O. rupestris* Raf. ramis levib. foliolis 5-7 sessilib. lato lanceol. acum. inciso serratis obliquatis, subtus concolor pubescens, impari sess. vel confluentis, thyrsis paucifloris depressis—very peculiar new sp. only found on the rocky summit of the Turkey Mts. in the Alleghanies, small branching shrub 2 or 3 feet high: the lack of warts, and confluent folioles with deep teeth separates it from *S. verrucosa*.

VIBURNUM.

217. VIBURNUM L. a Genus neither natural nor well defined having many anomalies, with many sp. ill defined; a good monograph is still required. It chiefly differs from *Sambucus* by a monosperm drupe and simple leaves, and is the type of my family VIBURNIDES of 1815, illustrated 1820 in annals of physical sciences, that differs from RUBIDES by nilocular fruit; both belong to my Nat. Ora. SPHANIDIA, answering to the Rubiaceae of old. Several sp. *V. prinifolium*, *pyrifolium* and *lentago* are hardly distinguished by botanists, *V. lantana*, *nudum*, *dentatum* &c included 2 or 3 sp. each, *V. opulus* several, and I have yet many new sp. to describe; they shall be ranged in 4 subgenera, that I proposed since 1820, besides my G. *Thyrsosma*.

218. Subg. VIBURNUM Raf. florib. conformis, stigm. 3 sess. sem. sepe levis—Types *V. lantana*, *lantanoïdes*, *grandifolia*, and most of the Asiatic and Japanese sp.—*V. tinus* and *tinoides*.

des form the section *Tinus* with evergreen leaves.

219. Subg. LENTAGO Raf. florib. conformis, stylus 1 crasso brevis, stigma unicum. capit. integro vel ang. vel 2-3lob. sem. sepe striatis vel angul.—Types nearly all the N. Amer. sp. such as *V. lentago* and akin with umbilicate or lobed stigma, *acerifolium*, *dentatum*, *nudum* and their related sp. also *V. orientale* probably, and *V. hirtum* with bilobe stigma.

220. Subg. OPULUS Tourn. florib. radiatis, ad rad. neutris ampliatis, stigm. sepe 3 sessil—Types *V. opulus*, *opuloides*, *molle*, *tomentosum*, *edule*, *oxycocus*, *plicatum* &c. calix not persistent as in Lentago.

221. Subg. TRAUPALOS Raf. (nom. grec) florib. radiatis, cal. reflex. stylis 3 longis divaricatis persistens. *Scandens*---Type *V. scandens* or *virens* of Thunberg, probably a peculiar G. when fruit will be known. Smith has verified that it has only 5 stamens and not 10 as erroneously printed by Thunberg.

222. THYRSOSMA Raf. sylv. tellur. 814. Quite a peculiar G. by flowers thyrsoïdal, cal. camp. 5lob. cor. hypocr. stig. trigono glanduloso ---Type my *Th. chineusis*, or *Vib. odoratissimum* of Edwards. All the *Viburnums* have cymose flowers and opposite leaves.

223. *Vib. L. membranaceum* Raf. ramulis cinereis sub4gonis, petiolis carinatis, fol. lanceol. vel cuneatis obtusiusc. integris vel subrepandis tenuis membranaceis glabris concolor, cymis pedunc. 5fidis—Florida and Georgia, near to *V. nitidum*, leaves 1 or 2 inches long, half inch broad, very thin, described from numerous specimens.

224, *Vib. L. nitidum* Ait. &c, a doubtful sp.

is it the last badly described? stated to have leaves linear lanceol. subserrate and lucid. Elliot did not see it.

225. *Vib. L. laurifolium* Raf. nudum L. auct. ramulis fuscatis sub4gonis subverrucosis, petiolis carinatis, fol. ellipticis glabris, basi acutis, apice obtusis, margine integris revolutis, supra lucidis rugosiusc, subtus pallidis; cymis pedunc. 5fidis—such is the real *nudum* so often blended with others, and which absurd name I have changed for a better. A small tree or large shrub 5 to 10 feet high, leaves 2 to 4 inches long, 1 or 2 broad. Found from New Jersey to Florida and from Ohio to Louisiana. The evergreen var. of Mts. may be another sp.

226. *Vib. L. ferrugineum* Raf. ramulis cinereis 4gonis, petiolis marginatis carinatis, fol. coriaceis glabris subtus ferrugineis, omnis variabilis obov. cuneat. obl. rhombeis, obtuse acuminatis, integris vel crenulatis; cymis subsessilib. 5fidis, fruct. obl, ceruleis---very distinct species leaves very variable as in next; but constantly small thick leathery rusty altho' smooth, hardly over one inch long. In pine woods of N. Jersey, 4 to 6 feet high. Stigma trigone trilobe.

227. *Vib. L. heterophyllum* Raf. ramulis fuscatis rugosis subang. petiolis brevis canalic. fol. glabris subtus glaucis, omnis variabilis, ovatis obovatisque, obl. vel lanceol, acutis vel obt. vel lanceol. acutis vel obt. vel retusis, crenatis vel erosis; cymis pedunc. 4-5fidis paucifloris---another sp, with anomalous leaves, commonly uncial, a small shrub 2 or 3 feet high, of Alleghany Mts. found as far North as the Oquago Mts. at the sources of the Delaware. It may be the *V. cassinoides* of the northern botanists, not of the South.

228. *Vib. L. retusum* Raf. ramulis fuscatis vix angul. petiolis brevis carinatis, fol. glabris fuscatis ovatis vel ovatoobl. utrinque acutis, non-nulis ellipt. retusis emarg. omnis subintegris vel flexuoso crenatis; cymis brevi pedunc. trifidis—probably the *V. cassinoides* of the South, but improperly described, and name often misapplied. Sent me from Alabama, leaves 1 or 2 inches long, sometimes very broad, fuscate on both sides, darker above, rather thin.

229. *Vib. L. squamatum* Wild. en. Sm. ramulis pallidis vix angul. sepe verrucosis, petiolis planis, rufo squamosis, fol. glabris obl. vel ellipt. obtusiusc. crenulatis, subtus concolor resinoso punctatis, cymis sessib. 4-5fid. rufo squamosis, fruct. ovatis nigris.—one of the sp. long blended with *V. nudum*, I had called it *V. punctatum* before I knew of Wildenow name, omitted by all our botanists; but it appears the *V. levigatum?* of Elliot. Thus found from New York to Carolina; a small shrub 3 or 4 feet high, leaves 1 or 2 inches long, flowers and fruits small, stigma entire or subbilobe.

230. *Vib. L. glaucum* Raf. ramulis pallidis 4gonis. petiol. semiteres, fol. uniformis obovatis vix acutis glabris apice serrulatis, utrinque latere glaucis; cymis sessilib. 4fidis, fruct. obl.—a fine sp. sent me from the Unaka Mts. of Carolina, near to *V. obovatum* Walt. but yet distinct by thin uncial leaves perfectly glaucous on both sides, uniform not crenate, nor with any glands, style and stigma as in *V. lentago*.

231. *Vib. L. repandum* Raf. ramulis fuscatis 4gonis, petiolis planis, fol. obov. vel subellipt. obtusis, integris sepe repandis, glabris, subtus glaucis; cymis peduncul. trifidis rufo squamatis—Mts. of Virginia, another sp. akin to *V.*

obovatum, distinct by peduncled cymes, repand leaves, commonly biuncial, not glandular &c.

232. *Vib. L. obovatum* Walt. Poir. Sm. E. cassinoides Mx. ramis virgatis, fol. cuneatis vel obov. integris vel crenatis, superis lanceol. subtus glandul, cymis sessilib. fruct. ovato subrot. —Carolina on streams, I have not seen it, but describe it from Elliot to contrast with the two last.

233. *Vib. obliquatum* Raf. ulmifol. Donn, Mg? ramis teretis biangul. apice villosis, petiolis semiter. fol. ellipt vel subov. obt. vel acutis, basi obliquatis, supra rugosis pubens subtus villosis glaucis dentatis; cymis pedunc. villosis 5fidis—Siberia, sent me for the *V. prunifolium!* but quite unlike, nearer *V. lantana*, which I have compared and differs by twigs thick terete smooth, leaves cordate, denticulate, much larger &c. A real *Viburnum* like the next. If it is the ulmifolium of Mg. Catal. it is also American.

234. *Vib. grandifolium* Ait. Sm. lantanoides Mx. &c, ramulis dichotomis sub4gonis rubescens, petiolis teretib. toment. fol. amplis subcordato subrot. acum. inequaliter serrulatis, subtus pallidis nervis tomentosis; cymis 4-5fidis toment, fruct. nigris ovatis cordatis—Alleghany Mts. 4 to 10 feet high, leaves 4 to 6 inches long and nearly as broad, stigmas 3 tubercles on a stump of a style. In Canada it is decumbent and smaller.

235. *Vib. L. rotundifolium* Raf. ramulis 4gonis pallidis subverrucosis, petiolis carinatis marginatis, fol. cartilagineis glaucescens-levis lucidis concolor, subrot. vel ellipt. utrinque obtusis vel retusis, remote serrulatis; cymis subsessilib. 3-4fidis, fruct. obov. fuscatis—Allegha-

ny Mts. very distinct from last, a real *Lentago* by style and stigma umbilicate; perhaps the *prunifolium* of some authors, but the real one has different leaves, petiols and fruits: leaves about biuncial.

236. *Vib. L. lentago* L. auct—ramulis subteretib. pallidis, petiolis canalic. marginatis, fol. ovat. vel ovatobl. acutis glabris uncinato serratis, basi interdum obliquis nervis rufis; cymis sessilib. 3-4fidis, fruct. ellipt. nigris—from Lake Erie to Tennessee, a tree 8 to 15 high, leaves 2 or 3 inches long, style thick conical, stigma truncate umbilicate. Often mistaken for the *V. prunifolium*, and once sent me as *V. dentatum*! altho' quite unlike.

237. *Vib. L. pyrifolium*. Poir. Pursh &c, ramulis 4gonis pallidis subverrucosis, petiolis semiteretib. fol. ovatis serrulatis acutis glabris concolor; cymis subsessilib. 3-4fidis, fruct. longo oblongis nigris.—Smaller tree than the last, leaves much smaller, style terete, stigma umbilicate. New York to Virginia.

238. *Vib. L. prunifolium* L. auct—ramulis teretib. fuscatis subverrucosis, petiolis planis vix marginatis, fol. latovatis serrulatis utrinque acutis glabris, subtus glaucis; cymis sessilib. 3-4fidis, fruct. subrot. ceruleis—often blended with the 2 last, I once could not distinguish them till I noticed the twigs, teeth and fruits, stigma similar.

239. *Vib. L. amblodes* Raf. ramulis teretis fuscatis rugosis, petiolis planis, fol. ovatis vel ovatobl. obtusiusc. glabris, obtuse dentatis, subtus fulvescens; cymis breve peduncul. 5fidis, fruct. globosis ceruleis—another fine sp. with fruits like the last; but leaves unlike with ob-

tuse teeth, and peduncled cymes. Found in Kentucky, 1818.

240. *Vib. L. longifolium* Raf. pyrifol. var. pennsylv. Sm. ramulis teretib. biangul. pallidis, petiolis carinatis, fol. ovatobl. elongatis acum. serrulatis, subtus glaucis; cymis subsessilib. 4fidis, fruct. obovat, nigris—Allegh. Mts. from Pennsylv. to Carolina, leaves 3 or 4 inches long. Smith states this was sent him by Muhlenberg, as his *arborescens*, he has no such name; but a *longifolium* in his Catalogue.

241. *Vib. L. rufidulum* Raf. ramulis teretis fuscatis, petiolis marginatis rufo pubens ut nervis, fol. ovat. ellipt. obtusis, argute serratis, tenuis glabris; cymis sessilib. 3fidis dilatatis rufo pubens—sent me from Alabama, leaves large 3 inches long, cyme ample, nearest to *V. lentago*, is it a var. of it?

242. *Vib. L. capitatum* Raf. ramulis teretis strictis, petiolis marginatis, fol. parvis ovatobl. obtusiusc. glabris integris subtus pallidis; cymis subsessilib. congestis globosis, fruct. oblongis nigris—collected in Florida or Georgia by Leconte, anonymous in Collins herb. akin to *V. laurifol.* but amply distinct by twigs, small leaves, globose heads. I took it at first for the *V. nudum* of Elliot, which I must add for contrast.

243. *Vib. L. palustre* Raf. nudum El. non alis—ramulis virgatis, juniorib. rufo pubens, fol. ovalib. subacum. integris, supra glabris, subtus punctatis, nervis et margine pubescens, cymis pubescens stigma 3lobo, fruct. ovatis ceruleis—Swamps of Carolina, my account entirely out of Elliotts description.

244. *Vib. L. lanceolatum* Raf. an lanceol? Hill. h. Kew. t. 19 in Vitm. ramulis cinereis

4gonis, petiolis canalic. fol. lanceol. vel. obl. utrinque acutis glabris uncinato-serrulatis; cymis sessilib. trifidis laxis—Found in Illinois, if the lanceol. of Hill also in Virg. Carol. 5 to 6 feet high, leaves triuncial. Is it also the *V. levigatum?* of Aiton, W. P. (not Elliot) stated to be the Cassine peragua, by Smith to have biangular twigs.

245. *Vib. L. dentatum* L. this and the 2 next are now well settled sp. I only mention them to add the twigs, stigmas and fruits, hardly attended to by botanists. This has—ramulis 4gonis cinereis verrucosis, fruct. obl. nigris, stigma crassum subsess. 3lobum.

246. *Vib. L. pubescens* Pursh, my *V. villosum* of 1808. but not of Swartz, rafinesquianum R. S. deemed var. of *dentatum* by many botanists—Ramulis teretis interdum biangulatis, verrucosis, fruct. obov. compr. rubescens, stylo crasso brevis, stigma umbilicato.

247. *Vib. L. acerifolium* L. auct—ramulis teretis rugosis fuscatis, fructib. ellipt. compr. rubelis. stigma sessile trigonum.

This ends the group of Lentagos, including (besides 2 real Viburnums and 3 doubtful sp.) 20 species in my Herbarium, whereof one half are new and properly distinguished by twigs, petiols, leaves cymes, fruits and stigmas! I shall add a few remarks on the subg. *Opulus* with one N. sp.

248. *Vib. Opulus* L. auct. ramulis 4gonis sulcatis, petiolis glandulosis et stipulis linearis, fol. glabris trilobis basi rotundatis laciniato dentatis, lobis acutis; cymis 5fidis—Europe.

249. *Vib. Op. pimina* Raf. oxycocis Pursh, ramulis 4gonis, petiolis glandul. non stipul. fol. glabris trilobis basi sepe acutis, lobis acumin.

repandis vel sub serratis, cymis ped. 5fidis—Ohio to Canada.

250. *Vib. Op. pimina*, var. *subcordatum* Raf. diff. fol. subcordatis, magis serratis—Alleghanies of West Pennsylvania.

251. *Vib. Op. pauciflorum* Raf. ramulis teretis verrucosis, petiolis nudis sine gland. vel stipulis, fol. latovatis non trilobis, basi rotundatis vel subcord. serratis glabris; cymis pedunc. paucifl. vel trifloris, fruct. rubris subrot. compressis—apparently different from *V. edule* with glandular petiols and trilobe leaves. From Labrador, stem thick rubicund, with small white warts, many bifoliate lateral shoots.

252. *Vib. Op. molle* Mx. a doubtful sp. I did not meet it at Danville Kentucky where found by Mx; he did not see the rays; perhaps it is a var. of *V. acerifolium* with leaves not trilobe: I have found it with leaves partly so.

CORNUS or CORNELS.

253. This G. is very near *Viburnum* in habit and fruit, but chiefly differs by 4 petals and stamens. one style and stigma; belonging with *Hedera* and akin to my family *HEDERIDES* of 1815; but it has some anomalies of inflorescence indicating G. or subgenera, such are

254. *CORNUS* Raf, petalis acutis, drupis globosis, fl. cymosis nudis fol. oppositis. Types most of the American sp. also *C. sanguinea*, *alba*, *dichotoma* &c. Leaves always entire as in all.

255. Subg. *MESOMERA* Raf. diff. florib. corymbosis nudis. fol. alternis. Types the sp. blended in *C. alternifolia*, see 274 to 278.

256. Subg. *KRANIOPSIS* Raf. florib. nudis panicul. fol. oppos. Types *U. paniculata* and *comosa*, 279, 280.

257. *EUKRANIA* Raf. florib. pedicel. umbellatis, involucris 4 subequalib. drupis ellipt. fol. oppos. vel verticil. trees and plants—Types C. mascula, canadensis and suecica. *Krania* and *Mesomora* were grecian names of the Cornels.

258. *CYNOXYLON* Raf. (dog-wood) petalis obtusis, florib. sessilib. subcapitatis. involucris 4phylis coloratis ineq. emarg. fruct. distinctis, oblongis, fol. oppos.—Type C. florida, distinguished since 1828.

259. *BENTHAMIA* Lind. non Rich. Raf. sylv. tel. 817. different *Cynoxylon*, drupis coalitis concretis (syncarpes) ut in *Morus*—Type B. or *Cornus fragifera* Wallich.

Having thus distinguished these groups, I shall mention all the true *Cornus*, seen alive & now mostly in my Herbal, describing the new kinds, which are 12, and contrasting them with the others.

260. *Cornus cinerea* Raf. ramulis teretis verrucosis rubicundis, petiolis canalic. ovatoobl. obovatisque acum. basi acutis nonnullis obliquatis, subtus cinereis pulverulentis: cymis pedunc. depressis trichotomis—in Mts. Alleghanies, 4 to 8 feet high, ovaries and unripe berries cinereous pulverulent, leaves 3 to 4 inches long, variable in breadth, some obovate and some quite oblong.

261. *Cornus stricta* auct. (fastigiata Mx.) diff. prec. ramulis ter. vel sub4gonis, non verruc. fol. sepe ovatis acum. subtus glaucis (jun. puberulis) fruct. nigris.

362. *Cornus cerulea* Lam. sericea auct.—ramulis ter. pubesc. fol. ellipt. acum. concolor, nervis subtus pubesc. fulvis, fruct. ceruleis.

263. *Cornus alba* Lher. auct.—ramulis sub4gon. rugosis glabris, pet. canalic. fol. ellipt. vel

obl. acum. basi acutis vel obliq. subtus glaucis scabriusc. cymis ped. 4fidis; fruct. albis—such is the American *C. alba*, leaves 2 or 3 inches long; the Sibirian appears different see next.

264. *Cornus sibirica* Raf. alba auct—diff. pet. semiteres, fol. amplis tenuis levis concolor lato ellipt. vix acum. cymis 5fidis—such are my Asiatic specimens, leaves 4 or 5 inches long, wide very thin.

265. *Cornus sanguinea* L. ramulis teretib. levis atropurp. petiolis canal. fol. ovatobl. vel ellipt. abrupte subacum. glabris concolor. cymis longe ped. 3fidis—Europe, the Asiatic and Sibirian appears quite different.

266. *Cornus dichotoma* Raf. sang. sibir. auct.—ramulis dichotomis, 4gonis verrucosis rubris, pet. canal. fol. latoblongis vel cuneatis sepe obliq. utrinque acutis vix acum. subtus glaucis nervis fulvis; cymis ped. submultifidis—Siberia, leaves 2 or 3 inches long.

267. *Cornus circinata* L'her. easily known by its rounded leaves tomentose white beneath, but often only broadly ovate, twigs fuscate terete smooth not verrucose as stated by some, cymes 5fid.

268. *Cornus serotina* Raf. vel. *lancifolia*—ramulis teretib. fuscatis rugosis, pet. canalic. fol. obl. lanceolatis acumin, sepe obliq. glabris, supra nervis sulcatis, subtus pallidis fulvescens; cymis ad dichot. longe ped. sepe 4fidis polygamis—Illinois, Kentucky, Missouri in prairies, a small shrub 3 to 5 feet high, leaves narrow commonly biuncial, cymes pauciflore, with many male or abortive flowers, which happens in other sp. but always in the next also. Flowering later than any other kinds in August and September.

269. *Cornus polygama* Raf. fl. lud. 247—ramulis strictis levis rubris, fol. sessilib. oblongis oblique acum. glabris subtus canis, cymis term. polygamis, fruct. nigris—West Louisiana, well described by Robin, fruits edible, not yet seen by me; but different from last by twigs, leaves &c.

270. *Cornus atrata* Raf. ramulis teretib. atratis levis, pet. brevis canal, fol. ovatoobl. acum. glabris subconcolor, cymis pedunc. hirsutis trifidis depressis—Florida and Alabama, nearest to *C. sanguinea* of Europe, probable the sp. so called by Walter, Elliot, Pursh; but leaves not pubescent as stated, flowers larger than in any other.

271. *Cornus parvifolia* Raf. ramulis cinereis sub4gonis punctato-verrucosis, pet. brevis semiteres, fol. ovatoobl. acum. parvis glabris subtus cinereis; cymis term. 3-4fidis—from Kentucky to Alabama, small shrub 3 or 4 feet high, leaves small mostly uncial.

272. *Cornus suffruticosa* Raf. atl. Journal p. 151—ramulis pallidis teretib. vel angul. rugosis, pet. brevis semiteres, fol. ovatis vel lanceol. obtuse acum. supra adpresso hispidulis, subtus glabris; cymis ad dichot. ped. 3-5fidis—akin to the last, but a northern sp. of Canada, Lakes Champlain and Erie; very variable, but always a small shrub 2 or 3 feet high, with scattered hairs above the leaves rather larger than in last, often biuncial.

273. *Cornus asperifolia* Mx. &c, appears to differ from last by twigs and petals pubescent and leaves tomentose beneath, size larger, see Elliot. A Southern sp. of Carolina, compare with next.

274. *Cornus* (Mesom) *undulata* Raf. ramu-

lis teretis pubesc. fuscatis, pet. brevis canalic. fol. sepe alternis ovatis acum. undulatis subrepandis, supra scabris, subtus cinereis tomentosis; corymbis pedunc. densifloris pubescens—This begins the group of corymbose *Mesomora*, and is also near to *C. asperifolia*, differing by broader undulate leaves and corymbose flowers. Leaves 1 or 2 inches long, base rounded. Sent me from Alabama.

275. *Cornus* (Mesom) *rotundifolia* Raf. ramulis fuscatis transverse rugosis, petiolis planis, fol. alt. ovatis subrotundis acum. tenuis glabris subtus glaucis; corymbis term. dichot. divaricatis—fine sp. of the Alleghany Mts. blended in *C. alternifolia* like all the *Mesomoras*, leaves 2 or 3 inches long, nearly as wide, very thin, nerves quite smooth.

276. *Cornus* (Mesom) *riparia* Raf. ramulis levigatis lucidis fuscatis, petiolis elongatis, fol. alt. ovatoobl. acum. basi acutis, supra levis, subtus canis, nervis pubescens; corymbis term. fastigiatis—Kentucky & Virginia near streams, remarkable by shining twigs without warts, leaves narrower and more discolor than in last, fruits round small dark purple.

277. *Cornus M. riparia*, var. *rugosa* Raf. diff. ramis rugosis, fol. minus canis—the most common near streams from New York to Virg. certainly the *C. alternif.* of many botanists, although no warts.

278. *Cornus M. punctata* Raf. ramulis rugosis fuscatis albo punctatis, petiolis canalic. fol. ovatoobl. acum. basi acutis, subtus glaucis levis; corymb. term. dichot. divaric. angulatis—the only kind with small warts, nearer to 275, but leaves narrow not so thin. Found near Lake Erie.

279. *Cornus* (*Kraniopsis*) *paniculata* Lher. auct. *racemosa* Lam.—ramulis rugosis fuscatis supra 4gonis, petiolis elong. semiteres, fol. oppos. ovatis acum. supra sulcato rugosis, subtus canis glabris; paniculis term. thyrsoidcis—Carolina &c.

280. *Cornus* (Kr.) *comosa* Raf. ramulis 4gonis rubicundis albo punctatis, petiolis brevis canalic. fol. oppos. ellipticis acumin. basi acutis, supra adpresso hispidulis, subtus concolor glabris; paniculis term. proliferis, apice foliosis comosis—very different from last, near to 272, a shrub of Kentucky, 4 or 5 feet high, leaves hardly biuncial, panicle small forming a compound raceme crowned with lanceolate leaves.

281. *Cornus* (*Eukrania*) *cyananthes* Raf. atl. j. 151. I saw in 1816 some specimens of a very curious herbaceous *Cornus* very near to *C. canadensis*, collected in Canada by Mr. Hawkins, which I deemed new having the umbels without involucre and blue flowers, not having met it since I will give the description I made then—caule angul. semipedale, fol. 6 vertic. sessilib. obov. acum, supra sulcatis, subtus glaucis nervosis, nervis oppos. paralelis; umbella peduncul. nuda nutans, ovar. obl. glaucum, cal. 4dent. petalis ceruleis, stylus purpureus elong. stigma lutescens—in *C. canadensis* the bracts are persistent umbel erect, fruits round, leaves unequal 2 larger ovate, flowers white.

I have found in Collins Herbarium, an evergreen shrub of Carolina, labelled a *Cornus!* with paniculate flowers, that I took at first for a N. sp. of subg. *Kraniopsis*; but in analyzing the flowers, I found it was a very different thing being a male specimen of a dioical shrub very

near to *Hamiltonia*; but totally unlike in leaves.

282. *TELUKRAMA* Raf. (n. gr. *Cornus*) Dioica, fl. masc. cal. campanul. basi solidus subangulato (ovar. abort.) apice 5lobo, lobis obt. patulis coloratis. stam. 5, basi cal. inserta, filam. filif. antheris 2loc. subrot. exertis, corolla nulla, disco concavo 5lobo, an fl. fem. et fruct. ut *Hamiltonia*? *fol. alt. semperv. fl. paniculatis*—Thus it differs from *Hamiltonia* by flowers not spicate, cal. not concave nor reflexed nor 5fid, stamens longer not inserted on top of calix &c. Probably of same family *ELEAGNIDES*.

283. *Telukrama obovata* Raf. glabra sempervirens, ramulis rubellis angulato rugosis, fol. terminalis, petiolis semiteres, obovatis integris coriaceis, basi obliquis, apice brevi acum. supra sulcato rugosis, subtus concolor levis, margine subrevolutis: panícula term. coarctata, florib. congestis subsessilib—Mts. of Carolina, found by Kin or Lyons, leaves uncial, quite unequal at base, panicle small with many crowded small whitish flowers.

There appears to be in the Southern Appalachian Mts. several related G. of rare dioical shrubs, such as this, my *Nestronia* of New Flora and *Hamiltonia*, which were rarely seen in flowers, and thus overlooked, or if in bloom mistaken like this, by the fruits lacking; to which I will add a 4th, found in fruit 60 years ago by Bartram and overlooked by all ever since; but so different in leaves, spines &c, as to preclude the idea of its being the female shrub of this or any other.

284. *PIMECARIA* Raf. (fat nut) dioica, fl. masc. . . . fem. paniculatis, fruct. drupis pruniformis, nucleus putamine fragile, intus oleoso &c—Bar-

tram only described the fruit and not the botanical characters of the flowers.

285. *Pimecaria odorata* Raf. frutex, fol. lanceol. integris lucidis, basi unica spina instructis, fl. panic. parvis lutescens odoratis—Florida on R. St. Juan, the *Tallow Nut* or Wild Lime of Bartram travels page 115. Shrub 6 to 8 feet high, leaves 2 or 3 inches long, one broad, with a stiff sharp thorn under each. Fruit size of a plumb, with soft yellow pulp, nut with a thin shell, kernel white tasting like almond, but more greasy like tallow.

HICORIA or HICKORY-TREES.

286. HICORIA Raf. 1808. *Carya* Nuttal 1818 &c. As early as 1804 I proposed to separate the Hickories from Walnuts, to which Muhlenberg objected. I did so in 1808 in my remarks on Michaux flora, and again in 1817, in my *Florula Ludoviciana*, giving the almost Grecian name of *Hicoria*; yet Nuttal changed it in 1818 (without mentioning my labor) into *Carya* which merely means *Nut*! and is as bad a name as that of *Nux* given by Adanson to *Juglans*, since it is the root of many other names *Caryocar*, *Caryota*, *Eucarya*, *Araucaria*, *Matricaria*, *Eleocarya* &c! some botanists have however adopted this bad name; but it is hoped will have no objection to my previous modification of it, when they may know of my previous claim—although this G. is well distinguished from *Juglans* by the fruit not a drupe, but a 4valve capsule, yet there are many anomalies in the flowers not yet well stated, and that I mean partly to indicate, as well as some new species.

287. Subg. PACANIA Raf. Pecan-nut or Pacanier of French—Lepandra (or scale of male

flower) ineq. 3part incurva, interdum duplex, stam. 4-6sess. fem. cal. 4fid! stigma sess. ineq. 4lobo. Nux teres vel ovalis non angulata dulcis—such is *Hic. oliveformis*, and probably the doubtful *Hic. myristica* with sulcate oval nuts.

288. Subg. DRIMOCARIA Raf. (bitter nut) Lepandra obcordata 3fida lac. media brevi acuta, stam. sepe 4 sess. fl. fem. cal. 4fid. refl. stigma discoides, 4lobis ad cal. alt. erosis, et stylis 2 divar. lanceol. Nux 4gona dura amara—the Pignuts or Bitternuts Hickories appear to form a peculiar group, they include *Hic. amara, porcina, aquatica, scabra, integrifolia* &c.

289. Subg. GLYCARIA Raf. (Sweet Nut) Lepandra plana lanceol. ad medio obtuse auricul. stam. sepe 4 subsess. per paria ad auric. oppos. fl. fem. 4fid. subfol. stig. sess. discoides 4lob. Nux 4angul. dulcis—this includes the common Hichory nuts and Shell barks, such as *Hic. alba, sulcata, microcarpa* &c.

290. Subg. HEXACARIA Raf. Lepandra obcordata 3fida (ut in 287) stam. 8. stigma 4gono subtrunc. Nux sub-hexagona, dulcis—Types the *Hic. tomentosa*, including *H. maxima* and probably other blended species.

291. JUGLANS Subg. PIKERIONARIA Raf. (butternut) Lepandra lanc. acuta, latere 4 auriculis acutis, paria infera minor, stam. 8, subsess. fl. fem. calix duplex, extus 4dent. stylo brevis crasso, stig. 2 crass. nux oblonga oleosa—Type *J. cinerea* or *cathartica*.

292. JUGLANS Subg. MELANOCARIA Raf. (black nut) Lepandra ut prec. stig. 2 clavatis laceris. nux globosa edulis—type *J. nigra* our black Walnut.

293. *Hicoria* (Drimoc) *scabra* Raf. foliolis 7 villosis scabris, ovato-lanceol. acum. serrulatis,

florib. villosis scabris 4andris, fructib. subrot. 4carinatis—in the Alleghany Mts. blended with the other Pig nuts, with bitter fruits.

294. *Hicoria* (*Drimoc*) *integrifolia* Raf. fl. ind. 361, foliolis 9-11 lanceol. acum. integris glabriusc. ramulis petiolisque tomentosis, lepan- dris elong. acum. 6-8andris. nucibus 4gonis— this sp. of Louisiana and Robin, appears to be akin to *Hexacaria* by the number of stamens, to *Glycaria* by the Lepandre; it is a tall tree with a brown bark and fine white heavy wood as all the Hickories, but the nut is bitter.

295. *Hicoria* (*Hexac*) *maxima* Raf. *Carya* toment. var. *maxima* Nutal—ramulis petiolisque toment. foliolis sepe 7 ovato-lanceol. acum. serrulatis, subtus pallidis pubescens, capsula crassa, nux crassa, 4angula maxima, mucrone 4angulo—Pennsylv. to Carolina, very distinct by large fruit, hardly 6angular as in *Hic. tomentosa*, but male fl. as in *Hexacaria*.

ÆSCULUS—BUCKEYES.

296. *ÆSCULUS* L. &c. This G. of 2 sp. only in L. is now become very prolific and the type of a natural family *ÆSCULIDES* with many G. deemed subg. by others. The sp. are not yet well ascertained, many were indicated by Bartram, not in our books, I have seen and collected others; some are however deemed hybrids! but are rather *specific deviations*! a good monograph of the family is yet required, notwithstanding the labors of Decandole and Spach. I can only afford additional materials for it. The 4 G. *Æsculus*, *Pavia*, *Macrothyrsus* and *Calothyrsus* must be adopted and well fixt: perhaps even others proposed, the first including all the sp. with echinate fruit, has yet many anomalies. I will however join them all here, pro-

posing chiefly to distinguish well the sp. I have seen and possess in Herbarium, adding those of Bartram, Lindley and others. The leaves are opposite and digitate in all except *Ozotis*.

297. *Nebropsis* Raf. (Buck eye) cal. urceol. vel subcamp. ineq. 5lobo deciduo, petalis 4 ineq. unguic. patens. stam. 7 ineq. incurvis pilosis, ovar. and fruct. muricatis vel echinatis. *Fl. racem. thyrsoides, sepe polygamis*.—This G. or subg. will include nearly all the American sp. with muricate fruits, very distinct from the Asiatic kinds.

298. *Æsc.* (*Nebropsis*) *muricata* Raf. (*ohi-ensis nonnullis non omnis*)—ramulis levib. tere-tis cinereis, petiolis longis semiteres rufo-furfuraceis, subtus striatis, foliolis 5, subpetiol. lato-blongis acum. equaliter serrulatis, supra lucidis, subtus nervis furfuraceis axillis villosis: fructib. echinato muricatis—from Lake Erie to Mis-souri! one of the sp. blended in *Æ. glabra*, *ohiensis*, *pallida*, *echinata*, all united and jum-bled by not being contrasted; but including many sp. and even probably forming a peculiar G. different from the Asiatic kinds. This has leaves 4 or 5 inches long, a loose racemose thyrsus, whitish flowers, 4 petals obovate, cal. sub-camp. &c, probably the undescribed *Æ. echi-nata* of Mg. *ohiensis* of Riddel, sent me by him as such. Seen alive with the 3 next since 1318.

299. *Æsc.* (*Nebropsis*) *ochroleuca* Raf. pal-lida? nonnullis auct.—ramulis glabris fuscatis an-gulatis, vel rugosis, petiolis trigonis glabris, stri-atis longis, foliolis 3-5 ovatoobl. vel obov. sessilib. acum. inequaliter serrulatis, subtus nervis pube-rulis; fructib. scabro muricatis—Ohio, Ken-tucky, Tennessee, Illinois &c, the most com-mon sp. with pale yellowish flowers, early ver-

nal, blossoming in March, similar to last, a small tree 15 to 25 feet high.

300. *Æsc.* (Nebropsis) *verrucosa* Raf.—ramulis crassis teretis cinereis verrucosis, petiolis brevis depressis pubesc. foliolis 5 brevipet. ovatoobl. acum. margine crenulato serrulatis ciliolatis, subtus nervis et axillis pubesc. thyrsis ovatis; glandulosus; fruct. scabro-muricatis—in Kentucky, blended with last even by myself for awhile. Flowers similar pale yellow, some red spots on petals, ovary oblong white hairy, style pilose like stamens, stigma red.

301. *Æsc.* (Nebropsis) *hystrix* Raf. arborea caudice spinoso, ramis transverse rugosis teretib. petiolis striatis puberulis, foliolis 5 obovatoobl. acum. ineq. serratis, axillis nervis rufo barbatis—a very striking sp. discovered in Sept. 1823 near the falls of the R. Cumberland, without flowers nor fruits; but distinct from all by the stem with long spines near the ground as in *Gleditsia*; it is a large tree 50 feet high.

I must now add the sp. of Willdenow and Lindley usually mistaken for these, giving their own words.

302. *Æsc.* (Nebropsis) *glabra* W. en. &c, arborea, foliolis 5 glaberrimis, petalis 4 patulis, stam. 7 elongatis, cal. tubul. 4dent. fruct. spinosis—flowers greenish yellow, none of our *Nebropsis* have the calix with 4 teeth.

303. *Æsc.* (Nebropsis) *pallida* W. en. &c, arboresc. foliolis 5 subt. pubec. petalis 4 patulis, cal. 4dent. stam. 7-8 elong. fruct. spinosis, flowers pale yellow.

304. *Æsc.* (Nebropsis) *alba* Raf. ohiotense Lindl. b. reg. (51 for 1838) ramulis pubesc. fol. obov. argute serratis, thyrsis obl. petalis crispis, albis stam. 7, caps. spinosis—is this the original

ohiensis? compare with my *muricata* 298.

305. *Æsc.* (Nebropsis) *neglecta* Lindl. b. reg. 1009, foliolis lanceol. ineq. serrul. axilis pilosis, thyrsis oblongis, cal. camp. (obtusè 5dent) stam. subexertis, petalis venosis flavescens, ovario tomentosò.

306. HIPPOCASTANUM Raf. cal. campanul. 5dent. petalis 5 ineq. patulis undul. stam. 7-8 ineq. exertis incurvis glabris caps. echinatis. *Fl. polyg. thyrsoides*—types *Æsc. hypocast. carnea, rubicunda* &c, with the two next of my Herbarium.

307. *Æsc.* (hippoc) *barbata* Raf. ramulis teretib. rubicundis, petiolis depressis basi et apice rufo barbatis, foliolis 5-7 obovat. acum. sessilib. duplicato crenato-serratis, subtus axilis barbatis; thyrsis obl. laxis pubesc. cal. glabris, petalis ciliatis—sent me from Alabama, apparently new, although near *carnea*, flowers rather large pale incarnate. Perhaps introduced there as all the sp. of this group are properly Asiatic. Perhaps the *Æsc. florida* of Bartr. trav. p. 401, found also by him in Alabama, only indicated by divaricate branches, large thyrsus of incarnate flowers.

308. *Æsc.* (hippoc) *levigata* Raf. glaberrima, ramulis teretis, petiolis striatis canalic. foliolis 5-7 sessilib. cuneatis acutis, ineq. serrulatis, tenuis levis; thyrsis oblongis coarctatis—this was sent me from Europe as the *A. hippocast.* but is much nearer to *carnea*? is it American or Asiatic? flowers incarnate.

309. *Æsc.* (hippoc) *carnea* W. Lind. b. reg. 1056, foliolis 5 obl. sessil. acum. serratis, florib. carneis pubescens—it has 5 petals 7 stamens, the *carnea* of Watson is the *rubicunda* of Dec. with 8 stamens, leaves lacinate serrate, compare 307.

310. *Ozotis* Raf. (twigs eared) florib. ut *Nebropsis*? fol. alternis ternatis stipulatis—habit so peculiar that it must form a distinct G. when flowers known. I found it without any in Collins herb. labelled *Æsc. ohiensis*!

311. *Ozotis trifoliata* Raf. glaberrima, ramulis geniculatis pentagonis striatis, petiolis canalic. stipulis reflexis amplis petiolo longior linear obl. foliolis 3 sessilib. ovatoobl. acutis subintegris—probably found in Arkansas by Nuttall, how he could mistake it for *Nebr. ohiensis* is unaccountable: different however from any trifoliolate tree or shrub that I know of, folioles triuncial.

312. *PAVIA* Juss. Dec. cal. tubul. ineq. 5dent. petalis ineq. connivens, stam. brevis glabris 6-8 ineq. subretic, capsulis levibus—American G. with many sp. not well described, those of South America hardly noticed. I am unacquainted with *P. atropurpurea*, *lucida*, *intermedia*, *mutabilis*, *livida*, *versicolor*, *wildenowiana*, except by name, therefore I shall chiefly well notice my own sp.

313. *Pavia mollis* Raf. ramulis teretis striatis glabris pallidis, petiolis canalic. carinatis, foliolis 5petiol. latoblongis utrinq. attenuatis, parce acute-ineq. serratis, supra glabriusc. subtus concolor mollis villosis; thyrsis obl. multifl. laxis, pedicelis subumbel. ff. rubris, stam. exertis—very striking sp. collected in Arkansas by Nuttall, anonymous in Collins herb. fl. handsome, about 50 or 60 in the thyrsus, calix quite tubular colored; stam. 7 some exerted. It must not be blended with *P. discolor*.

314. *Pavia glauca* Raf. glaberrima, ramulis teretis levis, petiolis subteretib. striatis, foliolis 5petiolatis ovatis obovatisque acumin. duplicato serratis, basi integris, supra lucidis, subtus glau-

cis—Florida, sent me without flowers, different from *P. discolor* by perfect smoothness &c.

315. *Pavia punctata* Raf. (var of *A. pavia* in Bartr. trav. p. 329). frutex, caulib. flexuosis decumbens, ramulis verrucosis cinereis, petiolis depressis rufo pubens, foliolis 5 pedicel. oblongis utrinque acutis, ineq. serrulatis, supra leviusc. nervis pubens, subtus pallidis pubesc. nervis rufidulis; thyrsis obl. paucifl. pedic. brevis 1-3fl. cal. tubul. 4lobis, stam. vix exertis—found by Bartram in the Cherokee or Unaka Mts., sent me from Georgia and Alabama, a shrub with many stems 5 or 6 feet high, flowers larger than in *P. rubra*, rosate with red dots, densely set, 12 to 18 on a thyrsus, 2 larger petals obovate sessile, 2 smaller rounded on long claws, calix not 5toothed but 4lobe. Thus almost a subg. that might be called *Dionixila* Raf.

316. *Pavia hybrida* Eaton? foliolis 5 ovato-bl. pubescens, utrinque acum. petalis 3! stam. inclusis—I dont know where Eaton took this sp. of Georgia, not in Elliot, nor any one else, flowers red and white, is it the *P. sylvatica* of Bartram? with such flowers, from Virginia to Florida, a large tree, are the petals really 3 only?

317. *Pavia discolor* Pursh El. Ed. b. reg. 310. Frutex foliolis 5 lanceol. acum, serratis subtus glaucis tomentosis; thyrsis ovatis, stam. 7 inclusis lanatis?—Georgia &c, shrub 4 feet high, flowers varied of yellow, white and purple.

318. *Pavia longiflora* Raf. frutex erectus, ramulis nodosis rugosis verrucosis cinereis, petiolis semiteres, foliolis 5 pedicel. obov. vel subobl. utrinque acutis, supra lucidis, subtus pallidis lucidis, axillis villosis; thyrsis paucifl. 5-12fl. secundis, pedunc. 1-3fl. petalis elongatis, stam. sepe inclusis—Maryland to Carol. shrub 4 to 6 feet high, flowers bright red often 2 inches long,

slender, petals longer than calix cuneate. No doubt blended with *P. rubra* by many, is it the *P. lucida* of some? seen alive, leaves small seldom over 2 inches.

319. *Pavia rubra* Auct. Raf. frutex, ramulis levib. angulat. rubescens, petiolis brevis angul. foliolis 5 subsess. obl. subacum. ineq. serrulatis, non lucidis, subtus pallidis, axilis villosis; thyrsis obl. multifl. subsecundis, pedunc. 2-3fl. cal. ventricos. petalis brevis, stam. inclusis—such is the *Aesc. pavia* of many, but perhaps not of all, flowers dull red, short and thick, very distinct by twigs, &c.

320. *Pavia parviflora* Raf. (non Walter) Frutex, ramulis nodosis rugosis verrucosis cinereis, petiolis carinatis rufis, foliolis 5 pedic. latobl. acum. tenuis concolor levib, ineq. serrul. snbtus nervis rufis, axilis villosis; thyrsis obl. multifl. laxis ped. brevis 3-5fl. pubens, cal. ventric. petalis vix exsertis, stam. inclusis—deemed the *A. pavia* in many gardens, Carol. and Florida, shrub 5 to 10 feet high, leaves large 3 to 5 inches long. flowers very small, some abortive, of a dull red. Seen alive.

321. *Pavia flava*, Dec. auct. (vel *reticulata* Raf.)—arborea, ramulis fuscatis sulcatis, petiolis depressis striatis glabris, foliolis 5 sessilib. obl. lanceol. acum. ineq. serrulatis, subtus pallidis pubens, nervis rufis, supra reticul. glabris; thyrsis obl. laxis pubescens, pedunc. 1-2fl. cal. suburceol. petalis elong. stam. inclusis—such are my specimens, but many sp. are evidently blended here as in *pavia*, Elliot blends shrubs with it. All the yellow flowered sp. probably form a subg. *Flavaria* Raf. the calix in this almost urceolate as in *Nebropsis*, stamens often villose &c. This has large leaves, folioles 5 or 6 inches long, 2 broad, flowers large yellow. Unaka Mts.

322. *Pavia flava* Raf. frutex, ramulis costatis pallidis, petiolis depressis villosis fulvescens apice tomentosis dentatis, foliolis 5 pedicellatis, latoblongis utrinque attenuatis, ineq. serrulatis, supra non reticul. subtus concolor glabris, nervis fulvo villosis; thyrsis obl. multifl. pubens, pedunc. multifl. cal. teres, petalis brevis, stam. nonulis exertis—probably the dwarf *P. flava* of Elliot, a shrub 4 to 6 feet high, very different from last in leaves and flowers, these very small, size of *P. parviflora*, calix tubular pale fulvous like the petals. Sent me from Alabama and seen alive in gardens.

323. *Pavia bicolor* Raf. arborea, ramulis fuscatis obtuse angul. petiolis striatis glabris, foliolis 5 (3 pedicellatis) oblongis acutis glabris, ineq. serrulatis, subtus axillis villosis; thyrsis elongatis multifl. pubens, pedunc. multifl. calicib. tubul. croceis, petalis luteis duplo longior, stam. 6 vix exertis—another very distinct sp. deemed *P. lutea* of Mx. in Collins herb, but calix quite tubular, leaves smooth &c, probably the var. of *flava* indicated by Riddel. From Ohio to Missouri, folioles 4 to 5 inches long, thyrsus 5 to 8 inches with 50 to 70 flowers as large as in *flava*, but calix long orange color contrasting with yellow petals.

324. *Pavia arguta* Raf. Aesc. pavia var. *arguta* Lindl. b. reg. 993—foliolis 5 ellipt. obl. argute serratis, acutis glabris, subtus axillis villosis; fl. polygamis, pedunc. bifloris, petalis 4-5 rubris—a doubtful sp. not well indicated nor figured, compare with my *P. rubra*.

325. *Pavia humilis* Lindl. b. reg. 1018. Frutex decumbens, foliolis 5 pedic. lanceol. ineq. serratis, subtus pubescens; thyrsis laxis, pedunc. 3fl. petalis rubris pubens, stam. inclusis—one of the shrubby kinds of Southern States, where many exist.

326. *Macrothyrsus* Spach. cal. obl. camp. subang. ineq. 5dent. petalis 4 unguic. spatulatis ineq. non connivens, stam. 6-7 ineq. exertis glabris, caps. inermis. *Thyrsis racemosis elongatis, florib. albis.*

327. *Macrothyrsus discolor* Spach, *Æsc.* et Pavia parviflora (Walt.) alba. macrostachya &c, auct—well known sp. with a peculiar habit, shrub erect 4 to 6 feet high, leaves oboval acum. serrulate villose beneath, twigs terete punctate verrucose, petiols terete &c, seen alive.

328. *Macrothyrsus odorata* Raf. *Æsc.* stolonifera Bartr. trav. 395—frutex 5-6pedale, caulib. divergens stoloniferis, ramis divaricatis foliolis 5 lanceol. serratis, florib. racemosis albis odoratis—such is the account of this sp. found by Bartram in Florida, omitted by all our botanists, or deemed a var of last; but it is the only odorous sp. of all these groups and folioles not obovate as in the last.

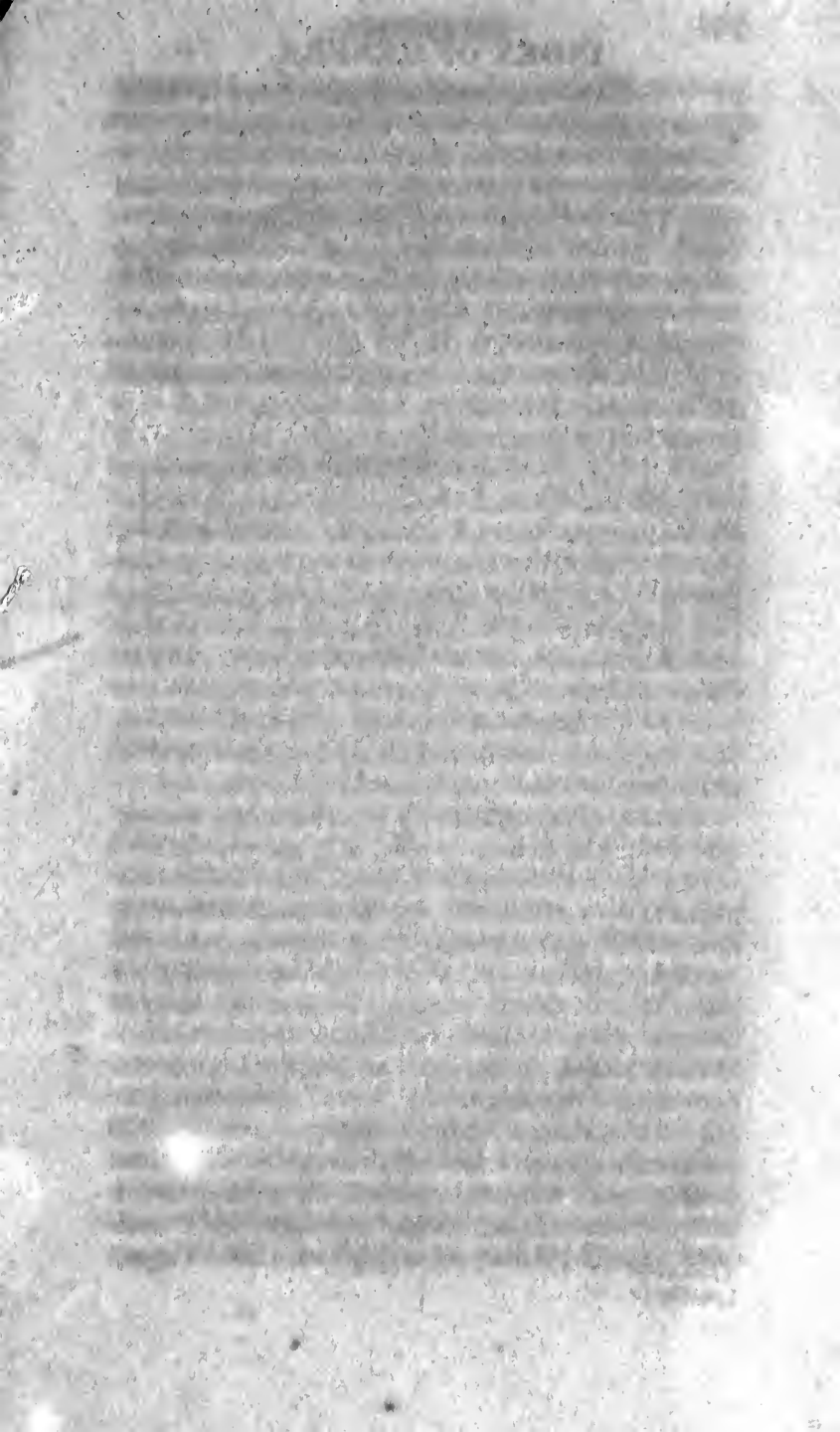
329. *Chiococca latifolia* Raf. ramulis rectis teretib. fuscatis subverrucosis, fol. brevi petiol. latovatis obtusis vel retusis membranaceis glaberrimis subtus pallidis, racemis fol. brevior—Cuba, collected by Jalambic, leaves 2 or 3 inches long, nealy 2 broad. Totally unlike the common *Ch. racemosa* of Antilles, my *Ch. secundiflora*, which by Swartz account is a subscaudent shrub with spreading branches, leaves oblong acuminate, flowers secund pale yellow.

330. *Chiococca floridana* Raf. racemosa of our American authors—ramulis rectis teretib. levis fuscatis, fol. brevi petiol. ovatis acutis coriaceis sempervirens, supra lucidis, subtus lutescens; racemis fol. subeq. fl. sparsis non secundis—Florida, apparently equally distinct, leaves biuncial, racemes 10-15flore, berries round. My specimen collected by Ware,

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