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CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD
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LOCAL PLANTS OF THE INNER COASTAL PLAIN OF SOUTHEASTERN VIRGINIA

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(Plates 474–487)

PART I. ACCOUNT OF A SUMMER'S COLLECTING¹

Accepting the renewed invitation of Professor John W. Bailey and my former student, Professor Robert F. Smart, to make headquarters for further botanical exploration of the Coastal Plain of Virginia at the Biological Laboratory of the University of Richmond, I asked Messrs. Bayard Long and Ludlow Griscom, who had shared the work farther east, to join me in some brief excursions on the Inner Coastal Plain, adjacent to the Piedmont region of the state. Unfortunately, Griscom was able to make only one very brief and unexpectedly curtailed trip with us in August, but Long, most happily, joined me for four different collecting trips at intervals from late June to late October. President Boatwright of the University and Dean Keller of

¹ In this paper it seems unnecessary to give the authors of species if they are in Gray's Manual, ed. 7.

The maps have been prepared by Miss KATHERINE FERNALD from the representation in the Gray Herbarium, supplemented by records in recent monographs and periodical literature. Unfortunately, for many states "common throughout" and similar generalized (and presumably erroneous) records can not be transferred with accuracy to maps. Many gaps, therefore, appear where some dots ought to be given. The herbarium of Professor Oakes Ames has supplemented the records for the *Orchidaceae* and that of the Arnold Arboretum those for ligneous plants. Doubtless some interesting stations for localized species have been overlooked and others are represented in other herbaria. The broad geographic relationships, however, will be apparent. MAP 1 carries the explanatory legend.

Westhampton College had most kindly provided airy living quarters with shower-baths, so necessary in hot weather, at the latter College, then closed for summer vacation; and Professors Bailey and Smart and their cordial associates gave us an ideal place for work on our collections during the sweltering summer days, in the beautifully equipped and really cool (often chilly) basement of the Biological Laboratory, where we had superabundant table-space, large sinks and drainage-tables and plenty of water for washing off the clay substratum which adhered to most roots. Perfect conditions, after the specimens had had a preliminary pressure and release of first moisture in drying paper and had been rehandled, straightened and "salivated"¹ or otherwise prepared for final drying between corrugated ventilators, were found in the piping-hot and temporarily disused green-house on the roof. There, with temperatures always well above 100° F. and as often approaching 130°, the firmly strapped presses quickly yielded the "finished product" in thoroughly dried and only rarely discolored specimens.

In a previous paper² I noted the marked difference in superficial soils of the two sections of the Coastal Plain in southeastern Virginia. The outer and chiefly lower eastern third, including Princess Anne and Norfolk Counties and the Dismal Swamp, extending into easternmost Nansemond County, is overlaid by early Quaternary sands, clays and peats which usually deeply mantle the older deposits beneath, with the upper level plains rarely reaching an altitude of 9 meters (about 30 feet), though with the sand-hills back of Cape Henry attaining a height of 24 meters (80 feet). The inner and generally higher western two-thirds of the Coastal Plain in this latitude, the region south of the estuary of the James and west of Nansemond River and the Dismal Swamp (including most of Nansemond County, the Counties of Isle of Wight, Surry, Prince George, Sussex and Southampton, and the eastern borders of Greenville, Dinwiddie and Chesterfield, thence northeastward beyond the area now under consideration) has older clays, sands and peats, derived from the underlying Miocene deposits which in many stream-beds and road-cuts are abundantly displayed as a continuous pavement-like stratum of closely crowded marine shells and skeletons.

This Inner Coastal Plain ranges in elevation from practical sea-level on the lower James to 30 meters (100 feet) along the rivers near

¹ See Fernald, *RHODORA*, xxiii. 111 (1921).

² *Plants from the Outer Coastal Plain of Virginia*, *RHODORA*, xxxviii. 376-378 (1936).

the Fall Line, with the dry upland plains and gently rolling country reaching levels from 7.5–46 meters (25–150 feet) and sometimes more. As a result of the usually greater elevation west of the Nansemond and the Dismal Swamp the streams, cutting through the soft deposits, have produced gullies and steep banks, the latter often pitching 7.5–30 meters (25–100 feet) to the borders of the streams or to their broad wooded bottomlands and swamps ("dismals"). The superficial deposits, whether of peat, sand, clay or marl, are apparently all highly acid, but wherever a stream has cut down to or through the shell-deposits, the bottomland soils, although giving an acid reaction, are sufficiently modified by the constantly supplied lime as to support vegetations amazingly different from those of the open plains and pine woods at levels only a few meters above them. The latter habitats are distinguished by numerous Coastal Plain endemics, the former and many of the steep wooded slopes show an unexpected number of species characteristic of the richer woodlands and bottoms of the interior, many of them more typical of the Mississippi Basin. These contrasts will be further noted in the course of the following narrative of the season's itinerary and chief discoveries and will be further discussed in Part III.

During our first trip (June 19–26) Smart, most fortunately, was able to join Long and me and to drive us over much territory between Henrico County and the North Carolina line. On one day we were accompanied by his keen student, Everett S. Luttrell, and on another by one of Professor Bailey's most promising men, a young entomologist, Carroll M. Williams, who, on the three subsequent trips, became our companion, driver and efficient and tireless helper. A medical student at the University, James Thomas of Emporia, most hospitably extended us the use of his camp on Three Creek and guided us to other interesting areas; consequently we spent portions of two days on Three Creek near Drewryville, there making the acquaintance of a host of species new to my experience and several new to Long's and subsisting largely on the bountiful supply of gigantic frog's legs which our attentive host and his colored boy collected (by shooting in the night) from Three Creek.

We soon confirmed a preconception that the Piedmont area adjacent to the intertonguing Coastal Plain would yield us comparatively few species not already known from Virginia. We were primarily interested in getting the southern plants not yet recognized in

the state, chiefly that the next edition of Gray's Manual may be more authoritative at this corner of the "manual range." Consequently we made it a point to work southward into the flatter country and toward the Carolina line. The late Earl J. Grimes, when teaching at William and Mary, had explored the Peninsula of Virginia with Mrs. Grimes, who, after her husband's untimely death, published¹ a detailed list of the flora of the region immediately to the east and southeast of Richmond, the Grimes territory extending westward into Henrico County. There was, consequently, little reason for us to work in that direction. Furthermore, although many notable range-extensions had been made by the Grimes's, it seemed evident from the ultimate detailed list that the field for most profitable discovery of Coastal Plain novelties in Virginia probably did not lie north of the James River. There are some highly noteworthy Coastal Plain isolations in that area, such as *Xyris platylepis* Chapm., *Juncus caesariensis* Coville (*J. asper* Engelm.) (MAP 1) and *Hypericum setosum* L., but they are relatively few. Incidentally, *Hypericum setosum* was based exclusively upon Virginia material collected by John Clayton and a characterization by Plukenet of a plant reputed to have come from Virginia. On the whole of the Peninsula of Virginia the Grimes's got only 2 species of *Rhynchospora*, a characteristic large genus of the best Coastal Plain habitats; in the region of Virginia bounded by the James, the Nansemond, the Dismal Swamp, the North Carolina line and the Fall Line, there are at least 17 species and varieties (the latter treated by many botanists as species). They got 25 species of the prevailing Coastal Plain genus *Panicum*; in the area just defined we know at least 73 (including varieties, which are maintained by Hitchcock & Chase and by Small as species). North of the James *Hypoxis* is represented only by the ubiquitous *H. hirsuta*; south of the James and the entrance to Chesapeake Bay we get 5 species in Virginia. These facts sufficiently show the contrast.

Further indicating the desirability of working out from Richmond chiefly into the Coastal Plain is the fact that the late Professor Merri-man's *Flora of Richmond and Vicinity* enumerated only plants which, primarily, do not give promise of specially thrilling spots. To be sure, he omitted all grasses, sedges, rushes and trees, so that his book is most literally a "Flora," but the only three species recorded by him which might indicate a strong Coastal Plain element near Richmond

¹ Eileen Whitehead Erlanson, *The Flora of the Peninsula of Virginia*, Pap. Mich. Acad. Sci. Arts and Let. iv¹. 115-182 (1925).

are here seriously questioned. These are *Drosera brevifolia*, *Helianthemum corymbosum* Michx. and *Chrysopsis gossypina* Nutt., all southern plants indicative of most interesting habitats and associations of species. Merriman gave no localities and his collections were destroyed by fire, so that there is no way now to tell just what he had before him. In five seasons of intensive botanizing, however, with rarities and specially significant species constantly in mind, my companions and I have never seen one of them,¹ though perpetually on the look-out for them, in the region from False Cape to Cape Henry, thence west to the Fall Line.

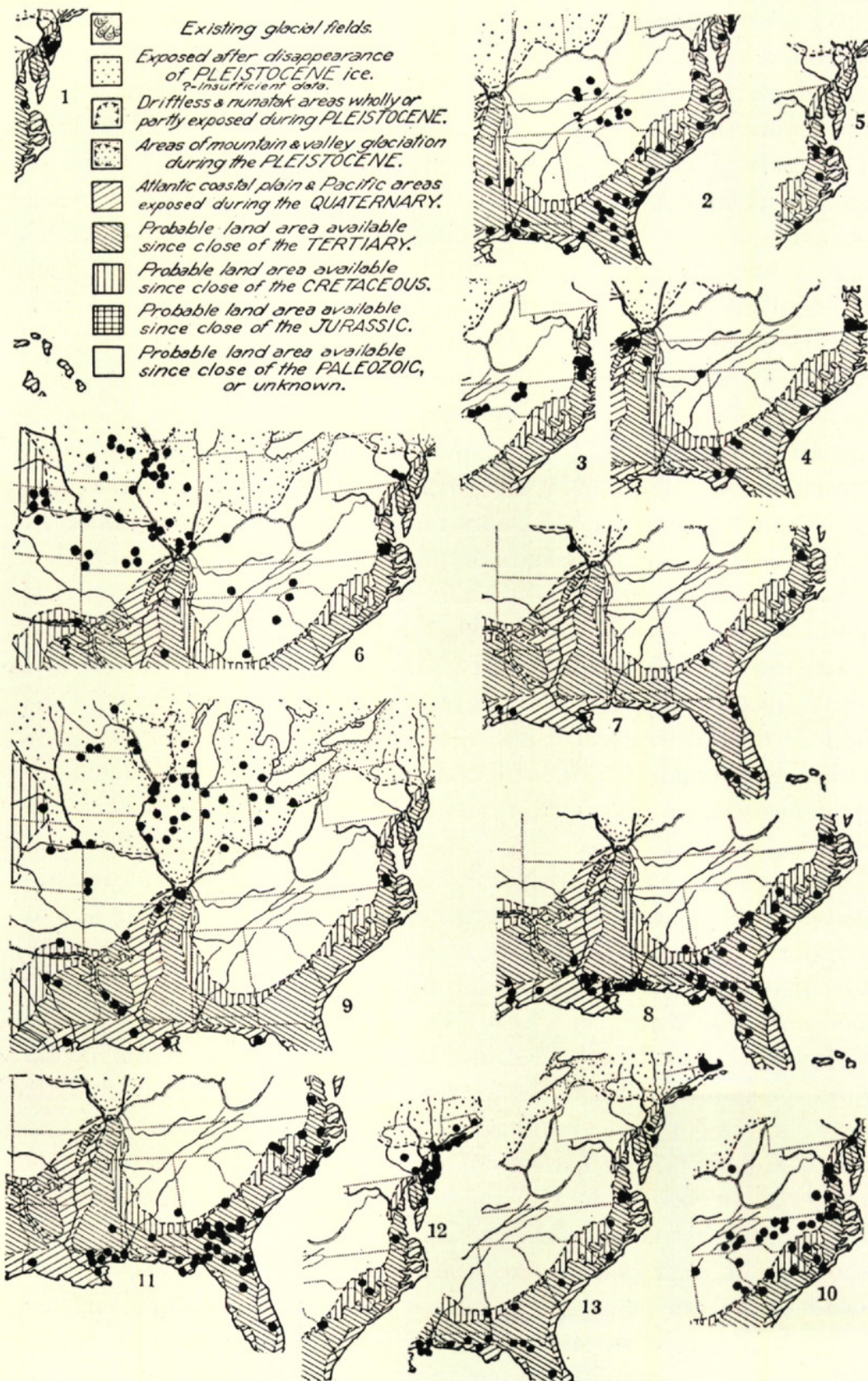
After we had breakfasted at his home, renewed the acquaintance of Mrs. Smart, changed into tramping clothes and heavily sprinkled ourselves with sulphur, for it was "chigger-time," Smart took us to a locality long known to local botanists, not far southeast of Petersburg but in Prince George County (Petersburg being in Dinwiddie County), where *Sarracenia flava* abounds. To us that seemed an indicator of good peaty openings and a distinctly southern flora. In this we were not disappointed. Passing through dry woods and clearings, attractive with purple spikes of *Psoralea psoraloides* (Walt.) Cory (*P. pedunculata*), a species with its typical form confined to the Coastal Plain of the Atlantic, but with a geographic variety characteristic of the interior of the continent (Texas to Florida, north to Kansas, Missouri, Illinois, Michigan, Ohio and the upland of North Carolina), the nondescript corollas of *Tephrosia spicata* (delicate pink on expanding, but rapidly changing to varying red and purple tones), the brilliant yellow flowers of a complex series related to *Oenothera fruticosa* and equally perplexing variations of *Euphorbia corollata*, we came upon an extensive depression, locally called a "bog," a platter-

¹ *Drosera capillaris* Poir., readily mistaken for *D. brevifolia*, occurs in several peaty depressions, at least in Dinwiddie, Prince George and Sussex Counties. It may extend slightly northward from there. But the only evidence I know of *D. brevifolia* in Virginia is undoubted material in the Gray Herbarium, collected in 1895 by J. W. Blankinship somewhere near Suffolk, and the apparently extensive colony discovered by Dr. Gerrit S. Miller in May, 1903: "common in a low moist field near the shore of Hampton Roads about three miles west of Hampton"—Proc. Biol. Soc. Wash. xvi. 102 (1903). Our parties have never found it. *Helianthemum corymbosum* is one of the most easily recognized species farther south, but we have repeatedly sought specially for it in appropriate habitats without success. The wholly different *H. canadense* is everywhere common in southeastern Virginia, though not mentioned by Merriman; it must be that he confused the names. Likewise, *Chrysopsis gossypina* (*C. pilosa* (Nutt.) Britton), named for *Gossypium*, the cotton-plant, because of its dense cottony coat, has probably been misinterpreted. It has long been credited to Virginia, but we have never met it there. Four other species and varieties of the genus are common in the southeastern counties.

like area of many acres a few meters lower than the gently merging rim, where water accumulates over winter and in early spring, but now, in late June, bone-dry and with an almost impregnable substratum of clay underlying the thin peat.

Sarracenia flava was, indeed, gratifyingly abundant and very handsome, with its stiffly erect slender yellow trumpets, but we were more interested in the carpet of the pink-flowered *Drosera capillaris* Poir. (unrecorded from north of South Carolina) upon which we walked. *Aletris aurea*, its occurrence in Virginia recently doubted, was abundant and coming into bloom; *Panicum strigosum*, rare so far north and recorded by Hitchcock & Chase only from Norfolk County, was largely hidden by the more abundant *P. consanguineum* (MAP 47), heretofore known in Virginia only from Virginia Beach, and the ubiquitous *P. lucidum*, *P. ensifolium* Baldwin (not recorded by Hitchcock from Virginia) and other species. *Tofieldia racemosa* was only in bud but abundant; but the striking orchid, with long widely divergent sepals and petals, *Cleistes divaricata* (L.) Ames (MAP 2), was as scarce as in its northernmost area, in southern New Jersey. Its present-day rarity in Virginia is clearly indicated by the fact that, in his detailed study of it Ames (Orchidaceae, fasc. vii. 21, 22) could find no Coastal Plain material from between the famous Ellendale bog in Delaware and the southeastern corner of South Carolina (though citing stations in the mountains of North Carolina). The species rests on *Arethusa divaricata* L., which was based on a Catesby plate and upon a Virginia specimen from John Clayton which Linnaeus saw and which was described by Clayton as flowering in Virginia early in July ("Palustribus initio Julii floret."—Clayton in Gronov. Fl. Virgin. 184). In fact, some local botanists believe that the type of the species came from this very station. *Asclepias rubra* and numerous other plants, familiar enough to Long, were quite new to me. *Scleria* was already in fruit and during the following week its half-dozen representatives in the area were as abundant and wide-spread as are *Carices* farther north. I have already published some of the results of our experiences with the genus.¹ *Rhynchospora* was becoming recognizable. *R. rariflora*, which soon proved to be in practically all peaty depressions, and *R. microcephala* Britton were easily recognized; and *R. Torreyana* (MAP 32), which we had not previously met in Virginia and which, apparently, is not recorded from between south-

¹ See RHODORA, xxxviii. 397, 398, plate 444. (1936).



MAP 1, range of *JUNCUS CAESARIENSIS*; 2, *CLEISTES DIVARICATA*; 3, *CHELONE CUTHBERTII*; 4, *SCIRPUS DIVARICATUS*; 5, *SAGITTARIA WEATHERBIANA*; 6, *FESTUCA PARADOXA* (*F. SHORTII*); 7, *HYPOXIS LEPTOCARPA*; 8, *MICRANTHEMUM UMBROSUM*; 9, *CAREX CRUS-CORVI*, including var. *VIRGINIANA* (from Virginia); 10, *GRATIOLA VISCIDULA*; 11, *CTENIUM AROMATICUM*; 12, *CAREX COLLINSII*; 13, *PANICUM WRIGHTIANUM* (northern half of range).

eastern North Carolina and New Jersey, abounded; but we were most interested in one very localized species, clearly not the ubiquitous *R. cymosa*, which it superficially resembles. Its technical characters of achene and tubercle make it a perfect match for the original material of *R. Harveyi* Wm. Boott, a characteristic species of wet prairies of Arkansas, Oklahoma and eastern Texas but already known, according to Small, to extend locally eastward into Georgia. A very common *Juncus* puzzled us. Clearly allied to *J. marginatus*, it had a subglobose or hemispherical and dense inflorescence which was unique. Not until we were putting up the specimens in the evening did we notice that it also has elongate, lash-like stolons (suggesting those of *Agropyron repens*). It was subsequently collected throughout the area and its prophylla, perianths, stamens and seeds all combine with its slenderly stoloniferous habit and rounded inflorescences to mark a very distinct new species not heretofore recognized. After a long-delayed lunch we were taken by Smart to a really wet portion of the bog, an area of inundated muddy swale and thicket, where open spots were full of *Juncus diffusissimus* Buckl. (MAP 33), a species chiefly of the Prairie States, from Indiana to Texas, but, like *Rynchospora Harveyi*, stated to come eastward to Georgia; and in one pastured corner of the swale, where *Aletris aurea* and *A. farinosa* commingled, two plants with flowers combining their distinctive traits and of a peculiar dull- or pinkish-orange color were evidently of hybrid origin. Luckily the cows had not eaten them!

This first day set a high standard of accomplishment, and we thereafter felt that we had failed to make good if we did not bring in five to ten species "new to Virginia" or at least reinstated in the flora and, as indicated in the sequel, we sometimes exceeded even the high limit then enthusiastically set. Other days were spent following up the boggy depressions chiefly in Prince George County, where *Sarracenia flava*, recognizable at a distance, was our first clue. In one or more wet spots we got *Carex vestita*, previously unknown south of the District of Columbia, and *Lachnocaulon anceps*, rare in Virginia, and, just once, a single small colony of the big-fruited *Rynchospora dodecandra* Baldw., the first north of North Carolina. In swampy thickets and woods or at their borders the recently described *Chelone Cuthbertii* Small (MAP 3), a plant known outside the Coastal Plain of Virginia only along or near the Blue Ridge of North Carolina, was frequent and eventually seen within a few miles of the North Carolina line in

Southampton County; and by streams or about springs or in ditches the recently described *Lycopus americanus*, var. *Longii* Benner,¹ unrecorded from south of New Jersey and Pennsylvania, was common, this also seen only a few miles north of North Carolina. Dry open woods and adjacent clearings yielded *Hypoxis micrantha* Pollard, only recently reported as reaching northward into Virginia, and *Buchnera americana*, a handsome plant with rich violet-purple flowers, primarily of Alleghenian and Ozarkian range and unmapped by Pennell (Scroph. E. Temp. N. Am. 478) on the Coastal Plain between northwestern Florida and northern Delaware, although he speaks (p. 477) of Clayton's having collected it in "lowland Virginia." *Silphium compositum* Michx. rose conspicuously to a height of 2 or 3 meters at the borders of woods, scattered all the way from the North Carolina line in Greenville and Southampton Counties northward nearly to Richmond (slightly south of there, along the Petersburg Pike in Chesterfield County). The species was not admitted as a Virginian by Torrey & Gray in 1842, nor in the several editions of Gray's *Manual* (1848-1908) nor in Gray's *Synoptical Flora*; nor is its extension into Virginia noted by Small in his *Flora* and *Manual*. Several collectors have reported it within the last five years as "new to Virginia"; but the records go back at least to 131 years ago, when Frederick Pursh went through the region and recorded it from "gravelly woods, . . . Virginia and Carolina." Dr. Lily M. Perry calls my attention to the fact that, in 1834 or soon thereafter M. A. Curtis, in his enumeration of plants around Wilmington, North Carolina, treating it as *S. terebinthinaceum*, var. *sinuatum*, said "I have traced this plant through the lower part of this State into Virginia and S. Carolina, and find it constantly preserving its character" (Curtis in Bost. Journ. Nat. Hist. i. 128). More detailed was the account of Lester F. Ward in 1886:

Silphium compositum was observed near Swift creek, about six miles north of Petersburg, and became abundant on Stony creek and between the Nottaway and the Meherrin. As this species has not been previously reported north of the southern boundary of Virginia this constitutes a considerable addition to its northward range. It is so abundant all through the southern half of Virginia that it is strange that this fact should have remained so long unknown, and this and many other things indicate that very little botanical work has been done in this region. (Ward in Bot. Gaz. xi. 37).

¹ Benner in *Bartonia*, xvi. 46 (1935).

The fact that, after such clear demonstrations of its abundance at the inner margin of the Coastal Plain in Virginia, the finding there of *Silphium compositum* should still be looked upon as a new discovery speaks eloquently of the need for a trained taxonomist in the region (and by *trained* I mean one so familiar with vascular plants that he recognizes and promptly evaluates the insignificant and the highly significant species when he sees them). With the *Silphium* or by themselves *Solidago yadkinensis* (Porter) Small and *S. ludoviciana* (Gray) Small¹ were often abundant, the first in full bloom, the second as yet showing no sign of flowering stems.

The "swamps" or "dismals," inundated wooded bottomlands along creeks and rivers, where Bald Cypress, *Taxodium distichum*, Water Ash, *Fraxinus caroliniana*, and the various Gums, *Liquidambar* and *Nyssa aquatica* and *N. sylvatica*, var. *biflora* (Walt.) Sarg., make a dark jungle, were the abode of several characteristic sedges, which at first "intrigued" us but which soon became monotonous: *Scirpus divaricatus* (MAP 4), reaching its northeastern limit here; *Rynchospora corniculata*, one of the most conspicuous members of the genus; *Carex louisianica* Bailey, the latter described from "Banks of the Appalachian River" and westward, but now known inland to Missouri and southwestern Indiana and around the Coastal Plain to New Jersey; *C. gigantea*, of almost identical range; and with them *C. typhina* and *C. squarrosa*, two characteristic northern and inland species of alluvium (Quebec and western New England to Wisconsin, etc., thence southward), which we had not expected to see as every-day plants of any part of the Coastal Plain. Suggestive of the Coastal Plain occurrence of *Carex typhina* and *C. squarrosa* was the occurrence in Henrico County, at the border of a swampy forest of *Ulmus alata*, and in low woods in Sussex County of *C. Frankii*, another inland species of "Swamps and wet meadows, in calcareous districts" from Texas to Georgia, north to Pennsylvania, western New York, Ohio, Indiana, Illinois, Missouri and Kansas. As a Coastal Plain plant it seemed out of place. But so did many other species of the bottomlands and swamps or dismals farther south, along the Meherrin, Nottoway and Blackwater Rivers and their tributaries.

Our introduction to a fully developed bottomland flora was at Drewryville along Three Creek, a single stream, where we saw it, meandering through a broad alluvial bottom with open forest of

¹ See Fernald, RHODORA, xxxviii. 209 (1936).

Water Ash, *Fraxinus caroliniana*, Water Hickory or Bitter Pecan, *Carya aquatica*, River Birch, *Betula nigra*, Over-cup Oak, *Quercus lyrata*, and many other species. Near the bridge at Drewryville there are very extensive open intervals with a lush and complicated flora. Reaching there long after noon we felt it the part of discretion to eat our lunches before leaving the road. Accordingly, we sat down in the shade of Water Hickory and Over-cup Oak, beside a clump of *Sagittaria Weatherbiana* Fernald¹ of Norfolk County and the states southward (MAP 5), and across the road from a fine tree of Pumpkin Ash, *Fraxinus profunda*, which Small assigns to river-banks from Georgia and Alabama to Missouri, etc. As we lunched we discussed the identity of the unfamiliar grass on which we were sitting; it proved to be *Festuca paradoxa* Desv., long known as *F. Shortii* (MAP 6), which was named for the famous Kentucky botanist, here new to Virginia, though we afterward found it generally dispersed in rich thickets through Southampton and adjacent counties. Hitchcock's map (*Manual*) indicates a range on "Prairies" etc. from western South and North Carolina to northeastern Texas, northward into Indiana, Illinois and Iowa, with an outlying station in Pennsylvania. Hastening lunch we started to look around in the pouring rain. The thicket of tall shrubs and small trees fascinated us, a tangle of numerous variations (as to leaf-outline) of a few species, here met for the first time but soon to become very familiar: the southern *Vaccinium arboreum* and *V. Elliottii* Chapm., *Viburnum rufidulum* and *Ilex decidua*, with *Crataegus* honorably represented by two perfectly clear species, *C. Marshallii* Eggleston (*C. apiifolia* Michx., not Medic.) and another not yet worked out. Beneath this rim of shrubs and small trees the ground had to us a strange appearance, with sprawling slender leaves radiating for 2-3 dm. in loose rosettes. Digging into the mat, we found it consisting of *Hypoxis leptocarpa* Engelm. & Gray (MAP 7), the first as far north as Virginia in the East, though known in essentially the same latitude in southern Missouri. Entangled with the *Hypoxis* was a most strange *Isoetes*, the exact identity of which I have been unable to make Mr. Weatherby divulge; and, near by, carpets of *Micranthemum umbrosum* (Walt.) Blake (MAP 8), the first from north of Wilmington, North Carolina, the plants still young and without flowers, but easily recognized. The *Carices* of all the bottomlands were there, but one delicate species, clearly of the *Laxiflorae* but

¹ RHODORA, xxxvii. 387, plates 385, 386 (1935).

quite new to us, proves to be a perfect match for the type of *Carex crebriflora* Wiegand from "Appalachicola River bottoms," a species heretofore unknown north of South Carolina. Farther out, on the broad swaley meadows and towering above most of its associates, was a splendid giant *Carex*, with broad whitish leaves and an unmistakable panicle, surely *C. crus-corvi* (MAP 9), originally described from New Orleans but now known, as stated by Mackenzie (N. Am. Fl.), in "Swamps, Florida to Texas, and northward in the Mississippi Valley to southern Michigan, southern Minnesota and eastern Nebraska." Three Creek (emptying into the Nottoway) and the Meherrin, where we collected the *Carex* next day, are pretty far (600 miles) from the easternmost Coastal Plain stations formerly known for *Carex crus-corvi*; and upon close comparison I find sufficient characters to separate the plant of Southampton County as a well-defined geographic variety but surely not as a distinct species, which its isolation might suggest. The thrills of the late afternoon were crowding us and we had hardly come into the bottomland swales before we must find our way over to the cabin which James Thomas had placed at our disposal. Very wet depressions had a tantalizing mat of young plants, some not yet in flower: *Rorippa aquatica* (Eaton) Palmer & Steyerlm., so like *Proserpinaca palustris*, mixed with it, as to puzzle us, but promptly distinguished by nibbling; *Ranunculus oblongifolius*, with only the tiniest of belated flowers; *Gratiola viscidula* Pennell (MAP 10) beautifully flowering; *Echinodorus radicans* (MAP 16), recognized by its leaves; and *Hydrolea quadrivalvis*, beginning to show flowering buds. This, too, was technically "new to Virginia"; the old basis for including Virginia as the northeastern limit of its range being a collection of Heller's made in 1893 (no. 1162) on the border of Northampton County, North Carolina, with the annotation on the North Carolina label: "On the Va. line." *Hydrolea* is now well demonstrated as a Virginia plant, for Long and I later got it, flowering and fruiting, in Sussex County as well. *Panicum roanokense*, with bluish-green flaccid leaves, abounded; but the species with it puzzled us, until we found a few precocious panicles which showed it to be *P. hians* Ell., the first evidence of the species extending northward into Virginia (Florida to Texas and New Mexico, northward into Oklahoma, southeastern Missouri and, now, southeastern Virginia).

It took until midnight and a second long session next morning to get our material merely into papers; and after a hot-weather breakfast

of fruit, cornbread, slabs of country ham, eggs, about a dozen frog's legs apiece, each seeming as large as the drumstick of a broiler-chicken, and coffee, we lingered about the cabin until noon! The small pond-like expansion of Three Creek by the cabin, the bathing pool for those brought up on the red or brown water of the region, was covered with a Cow Lily. This soon proved to be the southern species which, when originally published, was, by the International Rules, correctly called *Nymphaea fluviatilis* Harper; later, according to the International Rules as interpreted at Brussels, correctly called *Nymphoanthus fluviatilis* (Harper) Fernald; and now, owing to the inconsistent consistency of professional rule-makers, forced by the decision of the International Congress at Amsterdam in 1935 to be called (still correctly!) *Nuphar fluviatile* (Harper) Standley. Those are the sad truths which will be elucidated on a succeeding page; the happier truth is that the range of *N. fluviatile* is now extended northward into Virginia. The dry pine woods were a joy to northerners, with their broad carpets of the pale-leaved trailer, *Breweria humistrata*, and the deeply palmated leaves and really handsome white flowers of *Cnidoscolus stimulosus* (Michx.) Engelm. & Gray; and in a patch of rich woods bordering the bottomland near the cabin we found fruiting material of the small southern Pawpaw, *Asimina parviflora* (Michx.) Dunal, its range extended north from North Carolina. We subsequently found it also in southwestern Nansemond County.

The alluvium of Nottoway River at Courtland was briefly visited. The strange *Isoetes* was also there making solid turf in otherwise plantless open depressions; but the number of species not already seen was limited, although we there made the acquaintance of *Paronychia Baldwinii* (T. & G.) Chapman, the first from north of North Carolina, but by no means the last, for it later proved to be a characteristic plant in sandy borders of woods throughout most of Southampton, Sussex and Isle of Wight Counties. Similarly, the bottomlands above Haley's Bridge on the Meherrin gave us a repetition of the rich flora of the Nottoway system (including Three Creek), with *Crataegus Phaenopyrum* and a few other species we had not already seen. The Black Walnut, *Juglans nigra*, here had elongate fruits, the rare form which was described in 1785 by Humphrey Marshall as "*Juglans nigra oblonga*. Black oblong fruited Walnut" which "resembles the former so as scarcely to be distinguished from it, except by the fruit, which is oblong or oval." It is scarcely a geographic variety

but, rather, a notable form.¹ We had been unfortunate in reaching the Meherrin just at twilight, but the eye-straining glimpse we got convinced us that the area from Haley's Bridge southeastward will repay prolonged exploration.

In three weeks Long and I were back for our second canvass of the region (July 18-28). The heat had been accumulating and thunder showers, especially south of the James and the Appomattox, were of daily occurrence. Smart, involved in teaching in the Summer School, could go out with us on only one day, but Carroll Williams proved a competent and always willing companion and helper, happy to use the noon-hours sweeping for butterflies and the evening hours to drive us home, while we too often dozed, or afterward to linger toward midnight, helping clean the specimens to be cared for next morning. Another young man, Braxton Townsend of Petersburg, familiar with all the country south of the Appomattox and with a keen knowledge of the local flora derived in part from his grandfather, a correspondent of Asa Gray, most kindly guided us to spots which, in his young boyhood, had been choice habitats, but where, due to artificial draining, most of the once abundant rarities are now gone. He also gave us another day, helping in the collecting, and we greatly regretted that we could not have him regularly with us.

At the beginning of this second trip we resolved to follow the old Jerusalem Plank Road, running from Petersburg to Courtland (once called Jerusalem), and thence to push on to the Carolina line, reasoning, obviously, that the southernmost border of the state would furnish the larger proportion of novelties in the flora. The spirit was willing and the reasoning was logical enough, but the flesh weakened when we got three or four miles out of Petersburg and we decided to take a glimpse at the *Sarracenia flava* station in northwestern Prince George County where Smart had guided us to so many novelties. We had hardly left the main road when it seemed advisable to take a peep on the north side of the back road at a bushy swale, on the other side at a broad and open sphagnous swale, cleared for the running of a power-line. In the first habitat we promptly came upon the boreal *Glyceria canadensis*, the first from south of Maryland, and *Carex bullata*, the first from Virginia. Nearly everything there suggested a swampy thicket of New England; but across the road, the *Rynchosporas* and the fine carpet of *Lycopodium alopecuroides* (MAP 49) promised a dis-

¹ *JUGLANS NIGRA* L., forma **oblonga** (Marsh.), comb. nov. *J. nigra oblonga* Marsh. Arb. Amer. 67 (1785).

tinatively southern habitat. *Ludwigia hirtella*, *linearis* and *glandulosa* were abundant on the swale, and at its border there was no mistake about *Rhexia ciliosa*, with its tiny bristly-ciliate leaves and erect, campanulate flowers. When, in 1935, Griscom and I published our study of *Rhexia*, we could get no conclusive evidence of *R. ciliosa* from north of North Carolina¹; but it has a good station in Prince George County, and later Long and I found very limited ones in Isle of Wight and Nansemond Counties. On the larger open bog with the *Sarracenia* scattered plants of *Hypericum setosum* L. occurred but we did not there find its true home, though in October we discovered a *real* station for it in southern Nansemond. Grimes collected *H. setosum* near Williamsburg and reported it (RHODORA, xxiv. 151) as "new to Virginia." That was a natural inference from its omission from northern manuals but, as a matter of fact, as already noted on p. 324, the type was a Virginian collection of John Clayton's. A coarse grass which we had noticed in June was in flower, *Ctenium aromaticum*, a characteristic southern plant (MAP 11) which, when we tramped through it, justified its specific name. The day being intolerably hot and sticky and we already tired from an over-night train-ride, we returned to the coolness of the laboratory, there to care for our specimens; that we might get an early start on the 19th for the North Carolina line.

Passing without too much temptation through Chesterfield and Prince George Counties, we were just crossing the line into Sussex County, when, tiring of the monotonous ride, we got out to stretch our legs by going down an open pastured slope to a bit of boggy woods. This spot, on a small tributary of the Nottoway running through Jones Hole Swamp, at once stopped our southward progress. Fed by cold springs breaking through the plastic clay and marl, it was the last remnant of a truly wet, wooded sphagnous bog, the best we have yet explored in Virginia. Cows and pigs had almost a monopoly of the place and, although the clumsy and intimately inquisitive sows had wallowed everywhere and had uprooted most of the clumps of *Sarracenia flava* and *S. purpurea*, var. *venosa* (Raf.) Fern.,² they had not wholly destroyed everything. Tumbling, slipping and wallowing through the saturated clay and *Sphagnum*, we found all we could handle in typical species of southern bogs, with *Xyris* in abundance; the largest of the series being *X. ambigua* Beyrich, which from now on

¹ See Fernald & Griscom, RHODORA, xxxvii. 170 (1935).

² RHODORA, xxxviii. 233 (1936).

proved to be common (though not previously known north of North Carolina) and always very handsome in fresh flower, its petals large for the genus. On one margin of the bog, with the largest and handsomest of *Drosera capillaris* we have met, another *Xyris*, very tiny, occurred, low, with short, blue-green, membranous foliage, very small spikes and bristle-form scapes which, upon pulling, promptly disarticulated at base, in the manner of the boreal *X. montana*. This was *X. Curtissii* Malme (*X. neglecta* Small) at the first station recorded north of Georgia. *Carex Collinsii* Nutt. (MAP 12), also new to Virginia, was pushing its characteristic inflorescences (but now over-ripe) through the bushes; and the new *Juncus*, discovered in June, was so finely developed that we here made a large type-series. In the spring-heads a small pondweed was growing. Pulling out a handful and tossing it, mixed with *Utricularia gibba*, into the collecting box as merely *Potamogeton capillaceus* Poir. (heretofore unknown between Delaware and North Carolina), I was proceeding, when Long, as usual not satisfied to accept an off-hand identification, mildly asked if I had ever seen *P. capillaceus* with stiffly acicular and ascending submerged leaves; as he knew it it always has them flaccid and loosely divergent. That was surely the case, so we pulled in two more handfuls and when we separated it out and floated it next day we discovered that it also has subligneous black rhizomes. Its fruits are those of *P. capillaceus* but the plant, which we reexamined on a subsequent day, has none of the axillary rounded spikes of true *P. capillaceus*. It is a most distinct variety but, with no appreciable difference in fruits, I can hardly call it a distinct species.

We had left the car, to stretch our legs, at 10 o'clock. At 2:30, remembering that we had started a second time for the Carolina line and had not yet covered a quarter of the distance from Petersburg, we woke Carroll who, after hours of collecting butterflies, was blissfully forgetting the heat, and ate lunch, sharing the crusts with our now very familiar co-rooters. This area in Sussex County supports no village, but on the topographic sheet it seemed to be called Coddys-shore, a name we had never heard. Wishing to be reassured, we asked an elderly colored resident, "What do you call this community?" and promptly received the reply, "Homeville." Upon our protesting that Homeville is at least ten miles away, he replied, "Well, then, call it Sussex County, Virginia." On our labels we are calling it Coddys-shore, Sussex County.

Renewing the southward journey, we succeeded in driving at least six miles, when, about four miles northwest of Homeville, we were attracted by unspoiled dry pine woods where there must be good southern species. There were; but the plants which really astonished us were two northern and inland types, both fruiting and living happily with their southern associates. These were *Lycopodium tristachyum* and *L. complanatum*, var. *flabelliforme*, both characteristic of the Canadian flora.

Carroll, attracted to the border of a cultivated field by the masses of white flowers of Rose Mallow, *Hibiscus Moscheutos*, was busily sweeping with his net. Going over to tell him we were ready to start, I promptly changed my mind and shouted to Long to come and help me. At one end of the low field was an undisturbed and wet bit of bog, occupying perhaps an acre but clearly the last remnant of what must originally have been a shallow bog-pond toward a mile long. The *Hibiscus* was there because it was wet and because of a water-hole which extended through the area. Great masses of the beautiful *Sabatia campanulata* (L.) Torr. of the southern Appalachian Upland and the Northern Coastal Plain at first attracted me; then equally extensive clumps of *Hypericum denticulatum* Walt., var. *ovalifolium* (Britton) Blake, of the New Jersey Pine Barrens. It was altogether disconcerting, there were so many novel plants, but when Long came we each knelt in a pivotal spot and by collecting in a circle of ten-foot radius disentangled the less obvious species: a complicated series of variations of *Lycopodium inundatum*;¹ *Viola lanceolata*, var. *vittata* (Greene) Weath. & Griseb.² (*V. vittata* Greene), the northern limit given by Small as North Carolina; *Panicum Wrightianum* Scribn. (MAP 13), a species known at intervals from Central America and Cuba to southeastern Massachusetts, but not recorded by Hitchcock & Chase nor in Hitchcock's *Manual* from Virginia, though abundant here and afterward found by us twice in Isle Wight County. Intimately mixed with these and a series of species of *Rynchospora* and *Scleria* was a tussock-forming member of the former genus, with capillary leaves and culms widely sprawling under the taller plants. Superficially somewhat suggesting several of the finer-leaved southern species, its fruits seem specifically different from those of any now recognized and I shall describe and illustrate it in Part II. At one end of the bog and along

¹ See RHODORA, xxxviii. 382 (1936).

² RHODORA, xxxvi. 48 (1934).

the water-hole and ditch the most distinct of all the genus, *Panicum hemitomon*, "Maidencane" (MAP 14), abounded, its inflorescences mostly reduced by grasshoppers to mere champings, but interesting because this tropical species (Brazil to Cape May, New Jersey) has not been recorded from Virginia. It is abundant and at this point closely borders the main automobile road. Sharing the water-hole and ditch were other good things, including *Hydrolea quadrivalvis*, here, as along Three Creek, all spineless, whereas the species farther south is commonly (but not always), spiny, and *Rynchospora caduca* Ell., which we had had in Princess Anne and Norfolk Counties and later found at another station in Sussex; but the best plant of the water-hole is *Leersia hexandra* Swartz, a tropical species known to Hitchcock (*Man.*) only northward to North Carolina.

It was 6 o'clock and, obviously, the state line was not to be reached this day, but we did hope at least to see Homeville, four miles away, not because of its size, but because it is a route-junction and possessor of a railroad station, therefore on the maps. But that had to be the limit. Long, noting across the road from *Panicum hemitomon* a cut-over cypress-swamp, ventured into it, soon to return with material of the handsome new species which I have already described as *Panicum mundum*.¹ Turning back at the little group of houses constituting Homeville, Carroll drove, while Long and I slept, back to Richmond, or to the University, which is actually beyond Richmond, in West-hampton. We had with us at least eleven plants new to Virginia, four of them new to science!

The day Townsend took us to the stations where his grandfather had shown him many local and rare species, we saw, sadly and impressively, an example of what is more and more happening to the bogs and swamps of the Coastal Plain. He had not visited these spots for some years; in the meantime deep ditching has lowered the water-table and what were once splendid bogs are now dried-out remnants, invaded by aggressive pines and oaks, with the open bogs he remembered now quite ruined and most of the then interesting plants now extinct. In these young invading pine woods southwest of Petersburg, in Dinwiddie County, a few struggling and hopelessly shaded plants of the two species of *Sarracenia*, *S. flava* and *S. purpurea*, var. *venosa*, still lingered and with them their obvious hybrid, \times *S. Catesbaei* Ell., which had not been known in Virginia. *Panicum strigosum*, Lach-

¹ RHODORA, xxxviii. 392, pl. 443 (1936).

nocaulon anceps and a few other choice species of the old bog persisted as the rarest of unhappy remnants; but, all in all, the pines and oaks of the newly dried-out and recently invaded area are rapidly conquering. It is certainly a pity that Man so selfishly or short-sightedly is bent on spoiling the treasures which future generations must do without; but in eastern Virginia he is doing just what he does everywhere else, looking upon his temporary profits as outweighing all else. Here, so far as we could see, the total advantage to Man of the ruinous ditching was approximately the same as in many other such areas, practically *nil*.¹

On the 22nd, starting again toward North Carolina, we successfully passed Homeville, but near Littleton one of the rare depressions of unplowed land gave good promise. We there re-collected several choice species and met for the only time in the summer the very striking *Polygala ramosa*, a slender-stemmed plant with a broad and dense lemon-yellow inflorescence, which, upon drying, changes to blackish- or livid-green. The white-flowered *Sabatia paniculata* and the very similar pink-flowered *S. brachiata* abounded, as usual in southeastern Virginia in dry, not wet, clay and, to set us puzzling, there was an albino of the latter; and in the dry sand and clay two of my own species, *Cyperus hystericinus* and *C. dipsaciformis*, were maturing. It was gratifying to recognize them outside the herbarium.

Reaching Courtland for lunch, we were undecided which of several possible routes to take but, impressed by the possibilities of an area called Cypress Bridge, for the topographic map showed extensive bottomland and cypress swamp there, we voted in its favor. We actually did not reach the Bridge that day! The dry and sandy Yellow Pine woods had a finely developed display of *Rhynchosia*, *Desmodium* and other genera of unspoiled sandy woods, with *Cyperus retrorsus* Chapm., var. *Nashii* (Britton) Fern. & Griseb. of Cape Henry (and Florida), abundant, and *Paronychia Baldwinii*, *Breweria humistrata* and many other southern species now in fine flower. *Penstemon australis* Small (in fruit) and *Panicum mutabile* Scribn. & Sm. (MAP 15), both also near their northern limits, were equally abundant; and

¹ In April, 1937, we were distressed to find the remnant of bog four miles northwest of Homeville, the only known station for the new *Rynchospora* and the one known Virginia station for *Panicum hemitomon*, *Leersia hexandra* and other species, burned over and going under the plow. Next day our station southeast of New Bohemia, the only one in the state for the relic *Juncus brachycarpus* (see p. 346) and one of the few for *Cynoctonum Mitreola* and *Lobelia glandulifera*, was, likewise, being burned off. Still more scientifically significant relics destroyed!

we now got in full flower the common Everlasting of the region, *Gnaphalium obtusifolium*, var. *praecox* Fern.¹ When I described this southern early-flowering variety from South Carolina, Georgia and Alabama, the only evidence of it from Virginia was an old specimen of Rugel's, without stated locality. It is the only *Gnaphalium* of its group seen by us in Greenville, Southampton, Sussex and Isle of Wight Counties; in September and October typical late-flowering *G. obtusifolium*, so common in Princess Anne County and on the Eastern Shore, was nowhere seen. In 1899 the late Eugene P. Bicknell published the first of a series of studies of the genus under the alliterative title: "*Studies in Sisyrinchium—1: Sixteen new Species from the Southern States.*" In all our Virginia field-work we have yearned to secure a species so sibilantly set before the southern student of systematic botany. At last we were successful. Everywhere at the border of the sandy woods there was a plant thoroughly different from any we had met in Virginia. It was described by Bicknell as *Sisyrinchium carolinianum*, from "Western North Carolina and central South Carolina to Georgia, Alabama and Mississippi," the name subsequently altered to *S. fibrosum* Bicknell (1903) because of the prior use of the name he first gave. *S. fibrosum* soon became an every-day sight in dry sandy woods of Southampton, Sussex and Isle of Wight Counties; but whether it is specifically separable from *S. arenicola* Bicknell (1899), originally described from New Jersey and Long Island, seems very doubtful.

Starting next day where we had adjourned the night before, we spent most of the time on the bottomland bordering the cypress swamp, and when, in late afternoon, we crossed Cypress Bridge, we lingered to enjoy the view, so exotic to northern eyes, the quiet blackish water of the Nottoway there broadly expanded as a clear mirror about an apparent island and framed by giant cypresses with their bulging bases and innumerable tall "knees," the water bordered by the splendid *Hibiscus militaris* in full bloom, the surface a mat of *Nuphar fluviatile* in flower. That eminently southern landscape is permanently engraved on our memories. The margin of the inundated cypress swamp kept us busy until dark. We were delighted to collect species we had never before seen flowering, such as *Physostegia denticulata* and *Sabatia calycina*. *Panicum agrostoides*, var. *ramosius* (Mohr) Fern., recently discussed and illustrated by me² was puzzling

¹ RHODORA, xxxviii. 231, pl. 434 (1936).

² RHODORA, xxxviii. 390, pl. 442 (1936).

on account of its silvery-green panicles of slender spikelets and its perfectly smooth and membranous, elongate leaves. *Viola affinis*, the ordinary simple-leaved form, abounded; but equally abundant was a plant wholly resembling it but with deeply palmated foliage, *V. affinis*, var. *chalcosperma* (Brainerd) Griscom,¹ heretofore known only from Florida. *Hypoxis leptocarpa* (MAP 7), gigantic plants, some requiring folding to go on standard herbarium-sheets, and the strange *Isoetes* of Three Creek and the Nottoway higher up abounded; and *Echinodorus radicans* (MAP 16), now in flower and fruit, was not trailing, as we expected it to do, but had high-arching or doming, many-whorled inflorescences which developed leafy tufts when the tips touched the water or mud. *Lysimachia* (*Steironema*) *radicans*, already reported from Virginia but not represented in the Gray Herbarium from east of the Mississippi Valley, was there but we did not get into its real home, seeing only two individuals. We were impressed by the membranous and quite smooth leaves of *Tovara virginiana* (L.) Adans. (*Polygonum virginianum* L.), and when we dug plants found that they had unusually slender and elongate rhizomes. Subsequent study shows that the plant of the long-drowned bottomlands of all this area constitutes a well defined new variety.

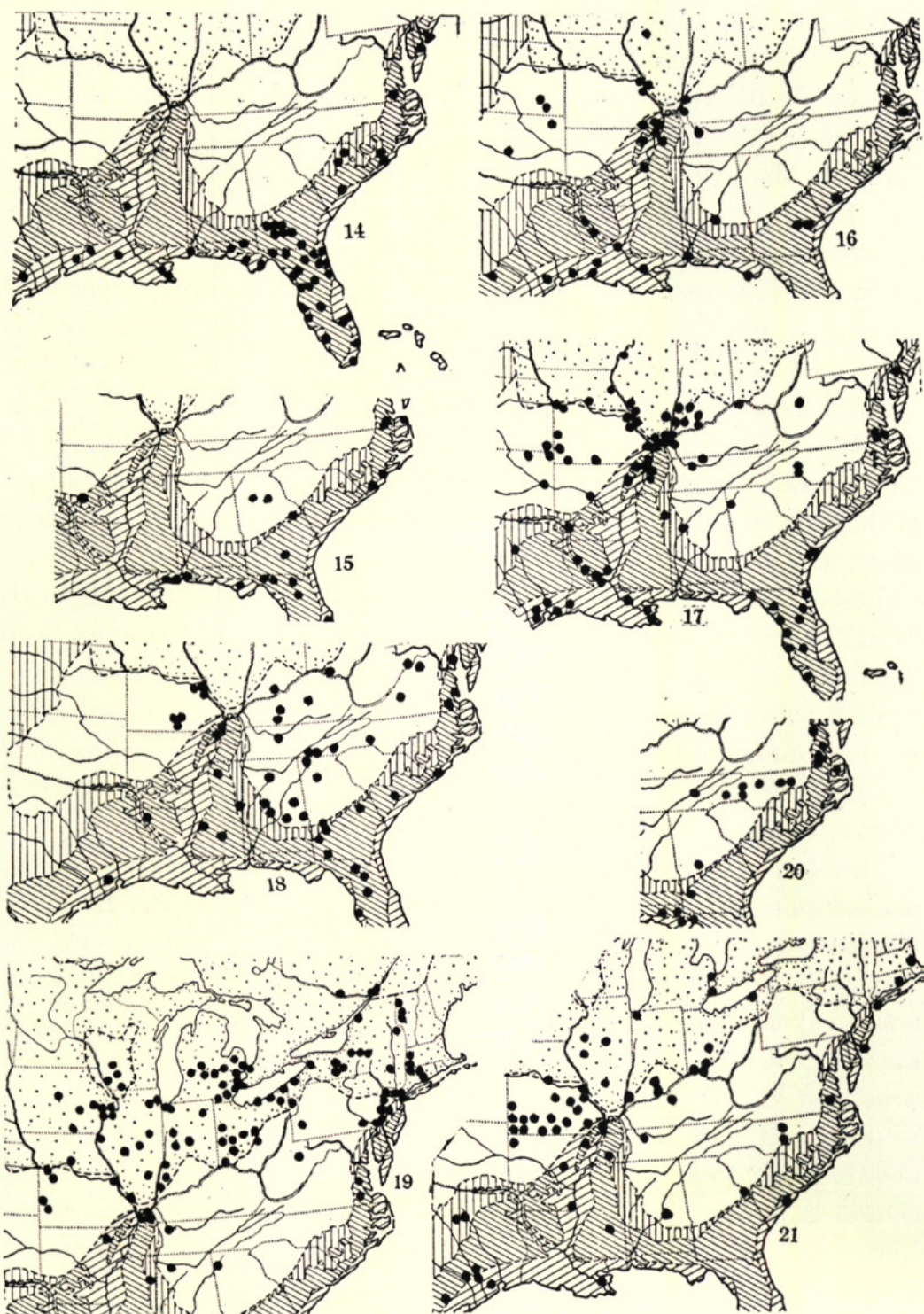
It was dark when we crossed the Bridge but we had to look upon one dryish, sandy alluvial bank. *Eragrostis hypnoides* was beautiful, with long repent flowering stems, and Long soon held up one solitary and dwarfed individual of *Paspalum dissectum*, not mapped by Hitchcock (*Man.*) from between Georgia, Tennessee and southern Illinois on the one hand and Maryland on the other. We all crept in the darkness over the alluvium but it was Long, or course, who found the next plant, only this was *P. fluitans* Ell. (MAP 17), the species called by Hitchcock, in Gray's *Manual*, *P. mucronatum*, and erroneously merged by Chase in her monograph and, following her, by Hitchcock in his *Manual* with the very different tropical *P. repens* Bergius. The identity of these plants will be fully discussed in Part II. The present interest is that Chase and, after her, Hitchcock, have given its northern limits as in South Carolina, Kentucky, southern Indiana, Illinois, Missouri and Kansas. In September we found the real Virginian home of *P. fluitans*, on the alluvium of the Nottoway near Courtland.

Deciding that the two species of *Paspalum* and other species which

¹ RHODORA, xxxviii. 49 (1936).

should grow with them must be on broader alluvial expanses up-river, we headed next afternoon for the Nottoway near Lumberton, where the map indicated a large pond-like expanse. But our new objective was never reached. Not far from Homeville we came to a small remnant of a once extensive boggy thicket, now drained nearly dry; but the few square rods still remaining damp and unplowed have a good colony of *Rynchospora caduca* and, best of all, an abundance of the tall *Lythrum lanceolatum* Ell., heretofore known only from Florida to Oklahoma and Texas, north to South Carolina. What a locality this must originally have been! Near by the dry woods of hickory and oak had a singular grass, combining the characters of *Panicum commutatum* and *P. Boscii*, var. *molle*. Until we get more we will leave it at that. The comparatively rich woods were full of *Clematis ochroleuca*, *Carex striatula* Michx., *Scrophularia marilandica*, the upland *Houstonia tenuifolia* and other species we saw nowhere else during the summer, and some of the shrubby oaks were *Quercus stellata*, var. *Boyntoni* (Beadle) Sargent (*Q. Boyntoni* Beadle), the range given by Small (*Man.*) as "Appalachian Valley, Ga. and Ala." Darkness was coming on and I was going back to the road well satisfied with the short afternoon's results, when Long shouted, "Oh! come and see the greatest thing you ever saw." Supposing he was joking, I continued, but his "five, six, eight, nine, ten" piqued my curiosity and I went back to a spot within three feet of where I had blindly stumbled through, to gaze on a beautiful flowering colony of *Hexalectris spicata* (MAP 18), the handsome Giant or Crested Coral-root, which occurs from Mexico and Arizona to Florida, northward to Missouri, Indiana and, rarely, Maryland, but with only four stations (Grimes's two near Williamsburg, Miss Rathbun's in Fauquier Co. (see Wherry, *Journ. Wash. Acad. Sci.* xvii. 36) and Gregory's in Amherst Co. (*Claytonia*, i. 14)) heretofore known in Virginia. That was a great climax for a great afternoon!

Next day, fortunately, Smart could join us. Since he wished to photograph *Hexalectris*, we took him, under oath never to divulge the station, to Homeville to see it. Then we proceeded as far as the Nottoway River, southwest of Burt. The alluvial woods, where we botanized after lunch, had the usual Coastal Plain and continental sedges of many bottomlands, but we were really amazed here to find *Carex Grayii* (MAP 19), for, like *C. squarrosa* and *C. typhina* with it, it is primarily a plant of the rich interior of the continent. On the opposite



MAP 14, range of *Panicum hemitomon* (northern extension); 15, *Panicum mutabile*; 16, *Echinodorus radicans* (northern half of range); 17, *Paspalum fluitans*; 18, *Hexalectris spicata* (northeastern area); 19, *Carex grayii*; 20, *Lobelia glandulifera*; 21, *Juncus brachycarpus*.

alluvial bottom Long came upon a large colony of a very strange *Geum*. In general it is nearest related to *G. canadense*, var. *Grimesii* Fern. & Weath.¹, but its very small heads are on very short divergent peduncles and overtopped by the leaves, and its tiny achenes are even smoother than in var. *Grimesii*. It will be described as new in Part II. These were good indicators of what could be found under advantageous conditions, but it was a sweltering and breathless day and the inclination to tramp was diminished. Riding seemed more inviting, so, remembering the North Carolina line, we went on to Cypress Bridge, stopping to collect still another strange *Isoetes* there, and proceeded southward as far as Sunbeam and a little beyond. Turning at dusk, still two miles within Southampton County, we crossed the Nottoway at Monroe Bridge, stopped to collect specialties in the dark at Sycamore Bend and, proceeding along a dirt road near there, saw within the beam from the headlight a fine colony of the white- or pink-flowered *Cirsium Nuttallii* (DC.) Gray, leaning out from the thicket. It is not comfortable to dig thistles and to fold tall specimens of them in the dark; and Carroll was amazed at our recognizing a novelty after dark. Our reply, "Why not after dark? We left Sunbeam half-an-hour back," may have been undignified but we should not have wished to pass *Cirsium Nuttallii*, for it had never been recorded from north of South Carolina.

The Jerusalem Plank Road and its arteries, such as we had followed, had supplied a rich harvest of relics and rarities, but there are other trunk-roads with their numerous arteries, which we had not even seen, and we had not set foot in the Counties of Surry and Isle of Wight, nor this year in Nansemond. So, having followed one road until we knew at least every house upon it, we decided to swing farther to the southeast, in the direction of Waverly, Windsor and Suffolk. There were two days in which to cover approximately 1500 square miles of new territory, and we started for Suffolk, foolishly imagining that we should run express the entire distance. But even before we had finished the daily monotonous trip from Richmond to Petersburg, whence we entered the more productive areas, we spied *Rhexia ventricosa* Fern. & Grisc.,² of Princess Anne and Norfolk Counties, in a peaty spot north of Swift Creek. *Rynchospora Wrightiana* Boeckl., which, when we got it near Virginia Beach, was new to the state, here abounded; and *Eupatorium leucolepis*, unrepresented in the Gray

¹ RHODORA, xxiv. 49 (1922).

² RHODORA, xxxvii. 172, pl. 346 (1935).

Herbarium from between South Carolina and Delaware, was recognizable, though young. Since its discovery by Rich and Knowlton in 1908 a plant of Plymouth County, Massachusetts and Washington County, Rhode Island has regularly passed as this species. I had never before met true *E. leucolepis* in the field and was startled by its divergence from the plant of southern New England. In part II I shall designate the latter as a strongly marked and isolated northern variety.

A few miles southeast of New Bohemia, in Prince George County, there is a small swale which we passed the first day, but the second, attracted by some spectacular plant, investigated. A *Xyris*, suggesting *X. torta* Sm. (*X. flexuosa* of authors), but with elongate and pointed, instead of round-tipped spikes and with chestnut-brown and almost chestnut-sized bulbs, seemed strange. Fortunately we took a good series, for it is undescribed, and in late August we re-collected it and added a station in Isle of Wight County. A *Lobelia*, not yet in flower, was obviously the southern *L. glandulifera* (Gray) Small (MAP 20), in October found more abundantly and in fruit nearer Petersburg. In his recently published study of the genus, McVaugh cited an old specimen "collected by Pursh in 1806 in Greenville or Southampton County"¹ and, still farther north, he had seen the species from James City and Hanover Counties, while to the south it occurs on the Coastal Plain, just over the Virginia line, in Pasquotank County, North Carolina. Otherwise, as McVaugh's map shows, *L. glandulifera* is a Piedmont and mountain species of interior and western North Carolina and eastern Tennessee; but 600 miles to the southwest of our area there is a second Coastal Plain concentration of it, in southwestern Georgia and northwestern Florida. Such a map as McVaugh's (our MAP 20) suggests a movement in two directions from the old Appalachian center to the young Coastal Plain. This rather general type of dispersal will be slightly considered in Part III, although it has already been outlined several times and is receiving constant recognition.² Leaving that for the present, it was certainly gratifying to feel that in our summer's collecting we had been so closely on the trail of the pioneer botanist, Frederick Pursh, 131 years ago (see p. 329). *Cynoctonum Mitreola* was associated with the *Lobelia*, our first col-

¹ RHODORA, xxxviii. 288 (1936).

² See, for instance, Fernald, *Specific Segregations and Identities in some Floras of eastern North America and the Old World*, RHODORA, xxxiii. 25-63 (1931); and Braun, *Some Relationships of the Flora of the Cumberland Plateau and Cumberland Mountains in Kentucky*, RHODORA, xxxix. 193-208 (1937).

lection of it in Virginia, though it had already been known in the state and we later found it along the Blackwater in Isle of Wight County. In fact, John Clayton got *Cynoctonum Mitreola* somewhere in the state and it was definitely listed by Gronovius (ed. 2:27) as *Ophiorrhiza foliis ovatis*, with *Mitreola* as a synonym.

Another plant we were delighted to collect near New Bohemia was *Juncus brachycarpus* (MAP 21), for this neat species gives us one of the most typical cases of segregation to the east and to the west of the ancient Appalachian core of eastern America. It occurs, always locally, from eastern Texas to Alabama and, perhaps, northwestern Florida (cited by Buchenau but unknown to Small), thence north through Arkansas, Missouri, western Tennessee, Kentucky and the Ohio Valley, into Illinois, southern Michigan and the region of Lake Ontario. East of the Appalachian axes it is even more scattered: Savannah River bottoms near Germain's Island, Columbia County, Georgia (*Harper*); near Charleston, South Carolina (*Beyrich*); High Point, Guilford County, North Carolina (*Canby*), well back in the Piedmont, and south of Ashboro, Randolph County, North Carolina (*Wiegand & Manning*), essentially as far inland; our station on the Inner Coastal Plain of Virginia; in white sand, Cape May, New Jersey (*O. H. Brown*); Freeport, on the Coastal Plain of Long Island (*Ferguson*); Ocean Beach, New London County, Connecticut (*Graves*), possibly there a local adventive; and, at the extreme northeastern limit of Tertiary deposits of the Coastal Plain, "in rich red friable soil like Potomac River soil," Scituate, Massachusetts (*Kennedy*).¹ When he originally described the species from "the Mississippi Valley," George Engelmann doubted its occurrence on the Atlantic slope, saying, "also, if the locality is correctly reported, near Charleston, S. C., *Beyrich*." The doubt now seem sufficiently removed and it becomes clear that the rarity of *Juncus brachycarpus* is presumably accounted for by its being a "relic-species" of considerable antiquity.

Three to four miles northwest of Waverly the pinelands are largely unspoiled. Many good series of local species were here collected, though most of them were no longer new to us. *Polygala Harperi* Small, with more compact inflorescences than the common *P. Curtissii* and paler coloring, was frequent in the area, either slender and subsimple or coarser and bushy-branched. It is not recorded from north of Georgia, though it was collected but not recognized as a novelty by

¹ For an enumeration of the then known stations on the Atlantic slope see O. H. Brown, *Bartonia*, no. 7: 23, 24 (1914).

the late A. B. Seymour near Waverly in 1891, many years before the discovery of the type of *P. Harperi*. One wet depression supports a fine colony of *Aletris aurea*, mixed with *Tofieldia racemosa* (also collected by Seymour in 1891) and *Iris prismatica*,¹ which, farther north, we look for near the coast; and across this boggy area we found the tall and handsome southern *Zigadenus glaberrimus* flowering. A small field within this pineland had been plowed and left fallow and, as usual under such circumstances, there was great stimulation (cultivation) of such species as tolerate disturbance. Attracted by an unusually showy display of the ubiquitous *Corcopsis verticillata*, we went to see what it was and found with it a heterogeneous display, including *Oenothera fruticosa*, var. *Eamesii* (Robins.) Blake, a characteristic extreme supposed to be endemic in southwestern Connecticut, and var. *humifusa* T. F. Allen, an equally extreme plant of Montauk Point, Long Island!

At various stops from here on we collected rare species (*Panicum Wrightianum*, *Lachnocaulon anceps*, etc.) almost every time we thought we could spare five minutes from the "express" run to Suffolk. Slightly east of Ivor there is a conspicuous stand, at the border of once swampy woods and near an artificial ditch, of *Catalpa speciosa*,

¹ There is an opportunity for what someone has called "micronyms" in *Iris prismatica*. In the greatest storehouse of such names we are told of the extensive genus *Iris*, that there are "Fully 100 species." 96 are recognized in the limited area covered and more than 80 of them are newly described from southern Louisiana. 3 Linnean species are admitted, 2 of Walter's, 1 of Pursh's, 1 of Ker-Gawler's and 1 of Mackenzie & Bush's. The remaining 88 are recent segregates by Small or, in some cases, Alexander. The "specific" differences are indicated in the keys:

Perianth red, orange-red, or copper-red *I. subfulva* Small.
Perianth mauve, violet or purple *I. regifulva* Alexander.

Or again:

Perianth intense magenta-purple *I. purpurisatta* Small.
Perianth vinaceous *I. viridivinea* Small.

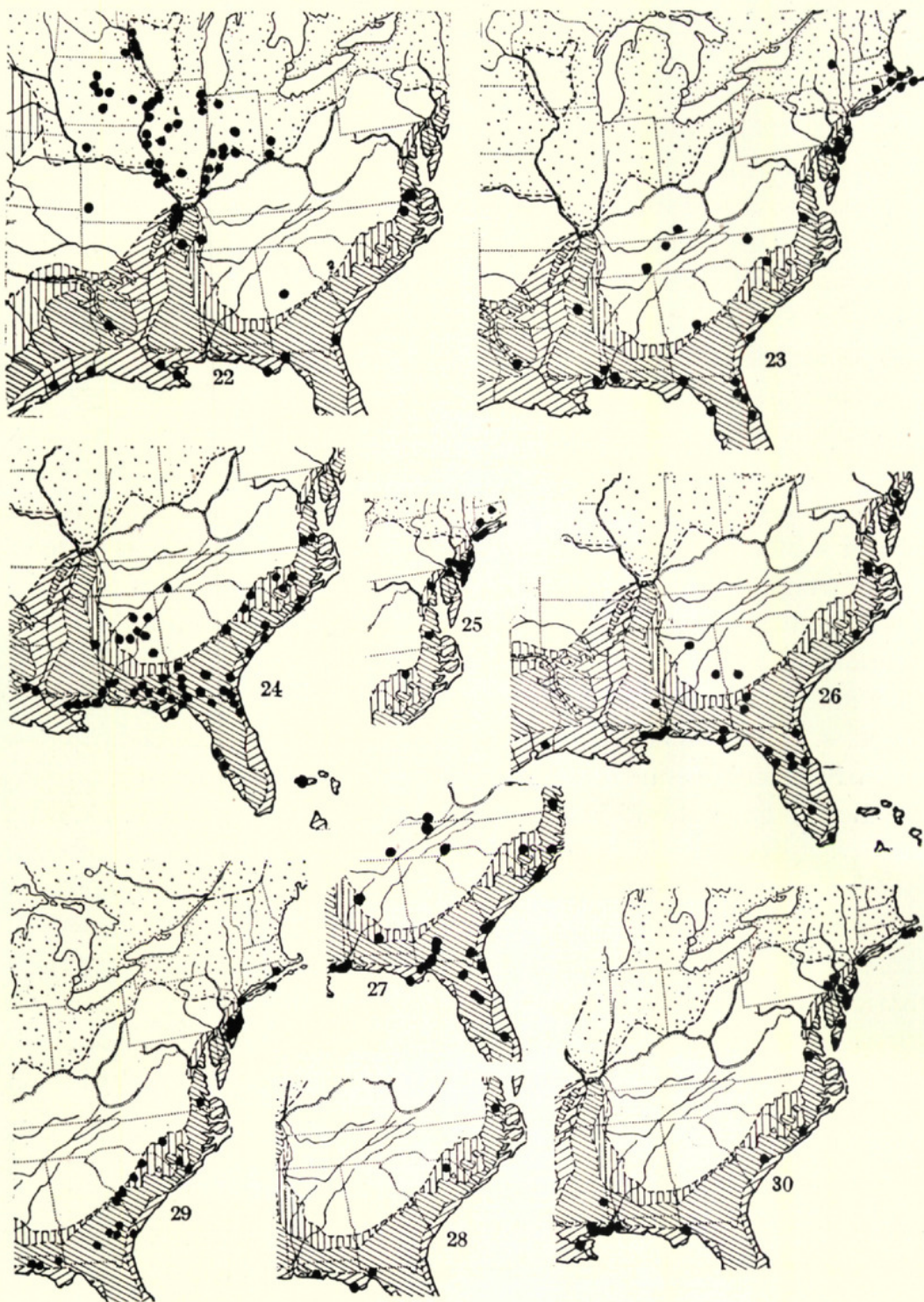
Furthermore, "Albino flowers occur in the various species." With 96 of the "Fully 100 species" allowed to the genus *Iris* thus accounted for, the problem remains as to which 4 or possibly more of all the old-line species (those of Aitcheson, Aiton, Ascherson & Sintenis, Baker, Barbey, Bertolini, Bieberstein, Boissier, Brotero, Bunge, Carrière, Dammann, DeCandolle, Douglas, Dykes, Eastwood, Ehrhart, Fedtschenko, Fischer, Foster, Franchet & Savatier, Gray, Henriques, Herbert, Heuffel, Hoffmann, Hooker filius, Janka, Ker-Gawler, Kerner, Lamarck, Lange, Lindley, Linnaeus, Maximowicz, C. A. Meyer, Micheli, Nuttall, Pallas, Poiret, Regel, Reichenbach filius, Schrenk, Schott, Siebold, Stapf, Thunberg, Tineo, Torrey, Wallich, Watson, Willdenow and C. H. Wright) are allowed to stand in making up the full 100.

It is interesting to note that what at New York have been called "chloronyms" are less acceptable: "The native plant of the southern Appalachian mountains appears to be almost identical with the European one [*Convallaria majalis*]. . . The native American plant usually has a shorter inflorescence, and has larger bracts and an oblate seed." The native American species is *C. majuscula* Greene.

a mid-western species, not supposed to grow naturally east of the Mississippi Valley, here very striking on account of the pendulous, cylindric pods up to 4.5 dm. long. Presumably originally planted, the tree is now thoroughly naturalized.

The wooded Warwick Swamp, where the Suffolk road crosses it, and the bottomland of the Blackwater, west of and at Zuni (the *i* pronounced like the personal pronoun), have many of the choice bottomland plants we had seen elsewhere, but here we made our first bow to *Leersia lenticularis* (MAP 22), handsome (quite distinguished) and with none of the highly objectionable qualities of the semicosmopolitan *L. oryzoides*. In August we saw it, fully developed, on many bottomlands, there the exclusive member of the genus; nevertheless, the range given in Hitchcock's *Manual* is from eastern Texas and Louisiana northward to Minnesota and Wisconsin, with the easternmost stations in Florida, Georgia, South Carolina, Kentucky and Indiana. Along Fontaine Creek, emptying into the Meherrin, it is equally abundant, and, remembering that 131 years ago Frederick Pursh botanized through this country, it seemed to us improbable that he could have overlooked so conspicuous a plant. And he surely did not. Pursh explicitly records it from North Carolina and Virginia!

"In wet gravelly woods in Illinois and Virginia. 24. July. *v. v.* This singular and elegant grass I found on the islands of Roanoke river in North Carolina, and observed it catching flies in the same manner as *Dionaea muscipula*: the valves of the corolla are nearly of the same structure as the leaves of that plant. I communicated specimens with this particular circumstance to Dr. B. S. Barton of Philadelphia, who has made mention of it in a paper on the irritability of plants."—Pursh, *Fl. Am. Sept.* i. 62 (1814). In view of Pursh's observation, which gave origin to the English name "Catch-fly Grass," made in Virginia and North Carolina, it is at least significant of the inadequacy of botanical collections from southeastern Virginia, that both states should be omitted from the mapped range of the species in Hitchcock's *Manual*. Its Virginia occurrence has been noted in Gray's *Manual* since the 2nd. edition. *Carex* was mostly out of season, dead-ripe and unrecognizable, but in these wooded swamps, inundated during much of the spring, one very tall and handsome species was just beginning to flower (with young anthers). In August, when mature, it proved to be *C. Joorii* Bailey, originally described from Louisiana, but now known to have the austro-riparian range we had come to expect,



MAP 22, range of *LEERSIA LENTICULARIS*; 23, *SCHWALBEA AMERICANA* (including *AUSTRALIS*); 24, *SEYMERIA CASSIODES*; 25, *CAREX BARRATII*; 26, *ARISTIDA VIRGATA*; 27, *HABENARIA BLEPHARIGLOTTIS* var. *CONSPICUA*; 28, *JUNCUS ABORTIVUS*; 29, *ARENARIA CAROLINIANA*; 30, *AGROSTIS ELATA*.

Florida to eastern Texas, north to southeastern Missouri, western Tennessee and eastern Virginia, in this case reaching Maryland.

At the border of the dry, sandy pine woods slightly east of Zuni all the *Stylosanthes biflora* was tall, slender and conspicuously villous-hirsute with horizontally divergent hairs, and south of Zuni it later proved to be the regular representative of the genus in dry pine barrens. This localized plant of Isle of Wight County is var. *hispidissima* (Michx.) Pollard & Ball. When Michaux described it in 1803 as *S. hispida*, var. β . *hispidissima*, he did not differentiate its range from that of his *S. hispida*, var. α . *nudiuscula* (typical smooth-stemmed *S. biflora* (L.) BSP.): "in Virginia et Carolina." Later botanists, during the more than a century and a third since Michaux got it, have not accumulated much of it in the larger public herbaria. In the Gray Herbarium there is a single old specimen collected by Rugel somewhere in southeastern Virginia and another said to have come from somewhere in North Carolina. The scarcity of material of it from the East is further attested by the recognition in both editions of Small's *Flora*, where very few varieties were honored as such, of "A campestrian form, with hirsute stems, . . . *S. biflora hispidissima*." The inland and western range of the plant, as indicated in the Gray Herbarium, is from Alabama to Texas, and "Arizona or New Mexico,"¹ north to Indiana, Illinois, Missouri and Oklahoma. Its occurrence essentially where Michaux found it is now demonstrated and we at last have a good series from a limited area in Virginia. In fact, Linnaeus's *Trifolium biflorum* Sp. Pl. 773 (1753), on which *Stylosanthes biflora* rests, was a mixture. The specimen in his own herbarium on which he based his diagnosis is, as shown by a photograph supplied by Mr. Spencer Savage, Assistant Secretary of the Linnean Society of London, the smooth-stemmed plant, but the Clayton plant described by Gronovius and cited by Linnaeus, *Trifolium caule piloso*, is, as shown by a photograph sent by Mr. Ramsbottom, Keeper of Botany in the British Museum, the best kind of *S. biflora*, var. *hispidissima*. Incidentally, var. *hispidissima* has recently been collected in eastern Maryland by Dr. Robert Tatnall. We shall soon have a real "range" for it far removed from its "campestrian" one. Whether it is actually isolated in the East, as so many plants seem to be, or whether the seeming gap between its Maryland, Virginia and North Carolina area and that north of the Gulf of Mexico will be

¹ Specimen collected by W. F. Parish (no. 314) in August, 1883 and sent to Asa Gray thus labeled.

bridged by collections from South Carolina and Georgia I am not situated to say. The bicentric range, as it now stands, is typical for much of the Coastal Plain flora, as made evident in these notes.

By shutting our eyes to tempting spots we got as far as Windsor (but not to Suffolk), for we had set our minds upon looking into some of the "pocosons" which so generally appear on the topographic sheets from southeastern Isle of Wight and Nansemond Counties to South Carolina. We had trimmed our time, this last day, to our own disadvantage in determining whether these great pocosons, so definitely limited on the Virginia sheets to this area, have distinctive floras. The only one we sighted, String-of-Logs Pocoson, was badly altered by cutting and fire where we saw it and we did not have a fair sample. Aiming to try Devil's Pocoson, reached by old dirt roads, we encountered the usual nonconformity between dirt roads on the maps of "horse-and-buggy days" and the "stream-lined" boulevards which alone appear on most current maps. Quickly losing our way, we drove through Boaz and Carrsville and ignominiously brought up in the city of Franklin! The obvious way home for most normal individuals was via Courtland, 10 miles away, thence by the very familiar Jerusalem Plank Road; but, having set our faces this last day in another direction, we could not tolerate further anticlimax and defeat. Consequently we chose to drive after dark by a dirt road northward to Zuni, a back road which was destined on our next two trips to be our most used artery through the country. Near Walters we suddenly realized that we were passing through as beautiful and unspoiled pineland as we had anywhere met. It was dark but, getting out to investigate, we promptly walked into a carpet of the tropical *Crotalaria rotundifolia*, here at its northern limit. Obviously the region must be explored on the next trip.

In three weeks we were back again at the University of Richmond for a third period (August 19-28) and, to our delight, Griscom was with us. It had been getting hotter, and Smart, possibly desiring to cool off, had gone after the Summer School for a vacation in the lower Mississippi Valley in Arkansas, while Bailey, with similar motives, had gone still farther south. The laboratory was not functioning as such, but, with Carroll still our companion and helper, we did what we could to keep the place busy through the climax of the hot spell. It was too hot for the chiggers, at least they were quiescent or indolent; and we daily drank up gallons of water. Even the most assertive

discourager in the party of eating and drinking between meals was officially recorded (by the cashier) as putting away 85c worth of refrigeration in a single forenoon; yet by the end of the day we were completely dehydrated.

Profiting by the experience in July, when for nine days we had pecked our way toward North Carolina without getting there, we now reversed the procedure and drove, via the Emporia road, until we crossed the line into Greenville County. By that time we yearned to look at some plants. So, easing up a little on our rigid plan, for we counted on lunching in town and it was now only 10 o'clock, we stopped a few miles north of Emporia. The sandy clearing was full of *Cirsium virginianum*, *Helianthus angustifolius*, the usual complex series in *Lespedeza*, and other late-flowering species now beginning to show color; and a small *Lechea*, at this late date just in flower, puzzled us. Dr. Hodgdon, the monographer of the genus, could see nothing in the flowering material, however, but *L. minor*, and, when we went out of our way in October to secure fruit, that, too, was of ordinary *L. minor*. We were specially pleased to find an abundance of fruiting *Schwalbea americana* (MAP 23), not because it is new to Virginia, for it was described from Virginian material from Clayton, but because the eastern monographer of the family, by logic which I cannot follow, has been doubting¹ its occurrence so far south. With it and certainly "new to Virginia" was the delicate yellow-flowered *Seymeria cassioides* (Walt.) Blake (MAP 24), a plant of the ancient high tablelands of southeastern Tennessee and northern Alabama, whence it spreads out to the young Coastal Plain from Louisiana to Florida (and the Bahamas), thence north to southeastern North Carolina, and now found in southeastern Virginia.

Still awaiting lunch time, we drove eastward from Emporia, aiming for bottomlands of Three Creek, having their richness at Drewryville in June still in mind. Crossing Caney Branch, we stopped to look over the rich woods there. One species is worth recording, a Buckeye in fruit, with very pubescent lower leaf-surfaces and irregular toothing which I can match only in *Aesculus discolor* Pursh, which Rehder (Man. Cult. Trees and Shrubs) cites as growing from Georgia to Missouri and Texas; flowering material may alter the identification. The bottomlands of Three Creek, where we went upon them, had been at least temporarily spoiled for us by heavy cutting of the timber,

¹ Pennell, Scroph. E. Temp. N. Am. 486 (1935).

but in a thicket not far from James River Junction there was a very tall and handsome *Pycnanthemum*. Its pale-pink or lilac corollas were so large and its whorls of flowers so broad that it suggested a *Monarda*, but it is a Coastal Plain extreme of the montane *P. pycnanthemoides*, a species so distinguished from its allies that Leavenworth originally described it as a member of another genus. The plant of Greensville County will be further discussed in Part II.

After lunch we drove without stop until we came to the North Carolina line south of Fontaine Creek, a few miles southwest of Haley's Bridge. The bottomlands of Fontaine Creek are comparatively narrow but here we introduced Griscom to many of the choice plants we already knew (*Leersia lenticularis*, *Panicum agrostoides*, var. *ramosius* and *P. stipitatum*, *Scirpus divaricatus*, *Rhynchospora corniculata*, *Carex Joorii*, *Rorippa aquatica*, *Ilex decidua*, etc.). These were mostly in fine condition and it was a delight to get superior material of them and to exhibit them to an appreciative audience. *Sagittaria australis* (J. G. Sm.) Small, seen by us nowhere else, was abundant; and Long, with a bachelor's uncanny interest in Mistletoe, *Phoradendron flavescens*, insisted on risking his neck in climbing out from a treacherous foot-hold in order to collect it from a host new to him, *Betula nigra*.

Having actually crossed the state line we could now start out to investigate the pine woods, noted by us in the dark, between Zuni and Franklin. On the way there our first stop was at the boggy depression in the pinelands northwest of Waverly, in order to show Griscom *Aletris aurea* and to see if anything new was coming into flower. The only prize was weather-worn material, which couldn't have been quite so far gone in July, when we overlooked it, of *Carex Barrattii* Schwein. & Torr. (MAP 25), apparently the first from Virginia. Taking the road south from Zuni, we soon came to the dammed-up brook in the woods. Here we tried our luck, getting a few desirable but scarcely notable plants. Along the road here, however, as in open woods near Kilby and near Yorktown, where Long, Fogg and I had collected it a year before, there was a fruiting species of Privet. Its small, membranous, and (when dried) caducous leaves show it to be *Ligustrum sinense* Lour., recorded by Small as an escape in southern Louisiana. Much farther north, in southeastern Virginia, it is making itself quite at home. A little farther on we stopped to investigate the roadside ditches, where *Lipocarpa maculata* and a complex series of species of *Hypericum* abound. Among the latter was *H. dissimulatum*

Bicknell, apparently not previously found in Virginia, though next day we found it abundant at the station of *Juncus brachycarpus* near New Bohemia. Long and Griscom wandered across some swales while I followed a wood-road, where, mixed with the common *Juncus repens* in a pocket of *Sphagnum*, *Proserpinaca pectinata* abounded. We have met it nowhere else in eastern Virginia nor is it represented in the Gray Herbarium from the state; it was, however, collected in Virginia by Clayton, his material, according to Asa Gray's memorandum, being a mixture of *P. palustris* and *P. pectinata*. Kearney also reported it from Northwest in Norfolk County. The party of two brought in a series of *Xyris*, *X. difformis* and *X. ambigua*, and a few plants of the new one which Long and I had got in July near New Bohemia. We all went back for more and during the quest found *Desmodium tenuifolium* T. & G., which has not been recorded from north of North Carolina.

Moving on to the south we came to extensive white sands in the open, suggestive in their small way of the dunes of the outer coast, in Princess Anne County, toward 50 miles away. And here, in the interior, were *Panicum Commonsianum* and *Cyperus filiculmis*, var. *oblitus* Fern. & Grisc.¹ of Cape Henry and, new to us, the southern *Aristida virgata* (MAP 26). Searching the dry woods for novelties and collecting variations of *Panicum lancearium* and *Paspalum setaceum*, which were here very abundant, and the first ordinary northern (even Hudsonian) Sheep Laurel, *Kalmia angustifolia*, we had ever seen on the Coastal Plain of Virginia, we were soon rewarded by great clumps with lilac-pink heads suggesting those of *Liatris* but in broad corymbs, the stems of the plants cespitose and without bulbous bases. This was surely something novel for us, our first representative in the "manual range" of the southern genus *Carphephorus*, in this case *C. bellidifolius* (Michx.) T. & G. By this time it was getting dark, but wanting to show Griscom the carpets of *Crotalaria rotundifolia*, we drove on toward Walters; and there, sharing the sands with the *Crotalaria*, were great carpets of another southern legume, *Zornia bracteata*, the branches trailing and intricately entangled; yet the description in one of our handbooks says "stems 1-7 dm. tall." Near-by, in the thicket, Griscom collected *Sanicula canadensis*, var. *floridana* (Bickn.) H. Wolff (*S. floridana* Bickn.), cited by Small as extending north only to South Carolina. Long, at the same time, was over the bank in rich

¹ RHODORA, xxxvii. 153, pl. 343 (1935).

woods, collecting woodland species of *Agrimonia* (*A. rostellata* and *A. microcarpa* Wallr.) and with them a single individual of *Galium uniflorum* Michx., which, when we got it in Princess Anne and Northampton Counties, was an extension north from South Carolina.

On the 22nd we returned to the Zuni-Walters territory. A colored farmer, seeing me with a handful of *Xyris* on the 20th, had said, "If you want to get a lot of that plant you'll find plenty in the bogs over that way," indicating the direction of Blackwater River. Since bogs were what we were seeking, we stopped at his home on the second trip and made further inquiries. He was away, but fortunately his wife had many times gone fishing in the Blackwater and told of dozens of little pond-holes in the sandy woods back of and beyond the next farm. At the next farm the description of the country was confirmed and, following the cart-road to which we were directed, we entered one of the botanical paradises of the summer, and confirmed an often forgotten axiom: it pays to ask the native.

The thin woods of *Pinus Taeda* and *Quercus laevis* Walt. (*Q. Catesbaei* Michx.)¹ were carpeted with white sand, with a dense thicket of the usual shrubs of sandy woods, but wherever there was an opening exciting herbs were growing. *Carphephorus bellidifolius* abounded and on the more open sands *Euphorbia Ipecacuanhae* occurred, some colonies with oval, others with linear leaves, all, of course, long past fruiting. Ordinarily they are looked upon as mere variants, with different leaf-forms, but the drying-presses told a new story: under the best of conditions the linear-leaved plant was thoroughly dry and stiff in two days; the oval-leaved one took a week. I was happy to collect these plants, which seemed interesting to me; but, while I was thus wasting time, Long shouted "Here's Pyxie" and Griscom replied "Here's another *Liatris*-like thing"; and, before I could reach either of them, there came the report: "*Seymeria cassioides* again." And so it went. We had stumbled into what we had sought for four years, real unspoiled pine barren in Virginia. *Pyxidanthera barbulata* literally carpeted the ground in many areas, at the first station discovered between southern New Jersey and North Carolina; *Carphephorus tomentosus* (Michx.) T. & G. was a second species of a genus, which, two days before, had been "new to Virginia," *C. tomentosus* not represented in the Gray Herbarium from north of Bladen County in southeastern North Carolina; *Seymeria cassioides* (MAP 24), already

¹ The oak, at its northern limit, not noted by us at the time, but found in April, 1937, to be the regular species of the area.

found with *Schwalbea americana* (MAP 23) in Greenville County, was here very abundant; its recorded northern limits otherwise in eastern and southeastern North Carolina. The wonderful caespitose *Xyris* of white sands, true *X. flexuosa*, as shown by Harper,¹ the plant with large spiraling castaneous bulbs, stiff and slender spiraling leaves and large acutish spikes of showy flowers (*X. arnicola* Small) soon appeared, again at its first station between New Jersey and North Carolina. In sphagnous depressions and thickets *Zigadenus glaberrimus* and *Sarracenia purpurea*, var. *venosa* were both scattered, *Panicum Clutei* was frequent and *Habenaria blephariglottis*, var. *conspicua* (MAP 27) was just flowering. Where the cart-road leads through an extensive sphagnous depression (undoubtedly one of the pond-holes of early spring) two plants specially pleased us: *Rynchospora distans* (Michx.) Vahl, heretofore recorded only from the West Indies and Florida to South Carolina; and *Juncus abortivus* Chapm. (MAP 28), a beautiful, tall relative of the northern *J. pelocarpus*, with coarse rhizomes (*J. pelocarpus*, var. *crassicaudex* Engelm.), primarily of Florida but known, very rarely indeed, northward to a single station in Darlington County, South Carolina (Coker, Plant Life of Hartsville, S. C., 28).

Long epitomized the situation as we all were conceiving it: "This is real botanizing!" Thirst, hunger and heat had been forgotten, though toward 3 o'clock we returned to the car, but, still wanting more, the insatiable hunter for rarities poked into one of the open bare white patches and brought us a collection of *Arenaria caroliniana* (MAP 29), the first from between New Jersey and southeastern North Carolina.

That had to suffice for the day's collecting in the pine barren. Driving on to our terminal of two days earlier, we proceeded to Walters. On the way one stop was made to look into a patch of rich woods, with clay substratum. Immediately Griscom called "Come here, isn't this *Ponthieva*?" Surely it was: *Ponthieva racemosa* (Walt.) Mohr., a tropical plant, growing from South and Central America and the West Indies north to North Carolina, and heretofore known in Virginia only as collected by John Clayton² and at Grimes's and Wherry's stations (presumably near where Clayton got it). In late

¹ R. M. Harper, *Torreyia*, v. 128 (1905).

² Asa Gray, studying Clayton's herbarium in 1839, made the memorandum against Clayton's *Orchis palmata maxima autumnalis* in Gronov. Fl. Virgin. ed. 2: 137 (1762), "*Cranichis multiflora*," i. e. *Ponthieva racemosa*.

August it was in young bud but Long and I got mature fruit in October. At the foot of the slope where *Ponthieva* grows (a station of fifty or more plants) the rare *Malaxis floridana* (Chapm.) Kuntze, sometimes united with the coarser green-flowered West Indian *M. spicata* Swartz, was growing, its pale orange to vermilion flowers just expanding. At the only other Virginia stations, in Gloucester County, where it was found by Miss Jennie S. Jones¹, and in the neighborhood of Williamsburg,² it grows in shell marl. At our station the neighboring brook had doubtless cut through the superficial acid sands to the Miocene shell-beds; at least the subsoil was argillaceous, as Long and I discovered in April of this year when, during a heavy rain, the road at this point became dangerously slippery and we begged Carroll to turn back.

This was Griscom's last day with us and, since he must take the night train north from Richmond, it was necessary to abbreviate the programme; but we took a last hour to drive over to Joyner's Bridge, which crosses the Blackwater. The sandy woods there still had *Carphephorus bellidifolius* and several other species which, two days before, had been so thrilling; and there we got for the first and only time all summer the slender *Trichostema lineare*, surely a local species in Virginia, ours being the first in the Gray Herbarium from between Maryland and Florida. Another plant which greatly interested us was a stout and broad-leaved herb, almost a shrub, obviously Euphorbiaceous, but new to us, *Stillingia sylvatica*, which was collected by Heller, in 1893, "near Franklin" but in Isle of Wight County, probably at this very station.

We greatly missed Griscom's stimulating comradeship, and next day, with a vast collection to care for and tired and needing to make up sleep, we did not venture out. On Monday³ we returned to the area south of Zuni, examined, with good success but without making specially notable new discoveries, several segments of the pine-barren area, and went on to examine the bottomland of the Nottoway at Courtland. Driving through the village of Lee's Mill, east of Franklin, we were delayed by the passing of a freight train at a grade-crossing.

¹ See Wherry, Journ. Wash. Acad. Sci. xviii. 215 (1928).

² Morris & Eames, Our Wild Orchids, 340, 352 et seq. (1929).

³ I think it was on this day, before we had left the Laboratory, that Mr. Bernard McCray, an enthusiastic amateur, arrived with his car full of freshly caught rattlers and copper-heads for Bailey's herpetological collections. The safe transfer of this lively and quite untamed menagerie to the cages on the top floor of the building made us thankful that we dealt with nothing more dangerous than *Rhus Toxicodendron* and Cat Briers.

Getting out to utilize the precious minute, we promptly collected two weedy plants of the roadside which still puzzle us, one a species of *Cenchrus* which we had earlier found near Zuni, the other a *Diodia* which it is difficult to match. The bottomland near Courtland, which we reached at twilight, was so evidently worth while that we resolved to return to it next day.

So, after getting our presses in order, we started for our last day together in the field, to visit old spots where, on earlier trips, we had noted plants of interest coming on, and to collect on the bottomland near Courtland. Stopping to get a good fruiting set of *Rhexia ciliosa* at our first station for it; again visiting a depression near Gary Church, to collect the autumnal state of a plant with all the characters of the glabrous *Panicum lucidum*, except that it is pubescent and the leaves opaque instead of lustrous; then driving, conscientiously, over to the Nottoway beyond Burt to get mature material of the strange *Geum*, we reached Courtland for a good afternoon along the river.

The wooded bottomland had the usual lush vegetation, with fruiting *Gonolobus* festooning some of the trees, and a tall, diffusely branched and small-headed *Boltonia*, which we had earlier found with Griscom, rather scantily, near Stony Creek, here abundant, an apparently undescribed species which had been represented in the Gray Herbarium only from southeastern South Carolina. *Hypericum petiolatum*, as usual, was abundant in the swampier areas, but we were more interested in a plant strongly resembling it but with quite sessile and somewhat clasping leaves, the flowers structurally like those of *H. petiolatum* and borne in the same way. This was what I had been looking for, the plant described by Walter in 1788 from South Carolina or Georgia as *H. tubulosum*, by Spach in 1836 from Louisiana as *Elodea Drummondii*, and by Small in 1898 as *Triadenum longifolium*. Now we definitely have it from Virginia, a June collection from swamps of the Appomattox being too young for positive identification. I have recently discussed the plant as *H. petiolatum*, var. *tubulosum* (Walt.) Fern.¹

On the bottomland of the Nottoway there are here many open sandy depressions where water has stood, but in August largely dried out or with only tiny central pools. The margins of such pools and rills gave us all we could handle until dark. *Axonopus furcatus*, familiar to us in Princess Anne County, was abundant. So was *Panicum*

¹ Fernald, RHODORA, xxxviii. 436 (1936).

hians, now with fully developed panicles and more representative than the young material collected in June on Three Creek. *Cyperus densicaespitosus* Mattf. & Kükenth. (*Kyllinga pumila*), *Lipocarpa maculata*, *Hemicarpha micrantha* and other nice sedges (some of which are not yet certainly identified) were here, and with them *Eleocharis acicularis*. The latter would hardly be worth mentioning from farther north; but Svenson, in his *Monographic Studies of the Genus Eleocharis*, states the southern limit in the East as "Pennsylvania, West Virginia"¹ etc. At last we were in the home of *Paspalum fluitans* (MAP 17), its only previous definite Virginia station being that at Cypress Bridge, where one starved individual was found (p. 341). But we were most pleased with a matted plant with the narrow opposite leaves with stipular bases and with the characteristic axillary fruits of the *Rubiaceae*. This is *Oldenlandia Boscii* (DC.) Chapman, its previous known range, as given by Small, being from Florida to Texas, north to South Carolina, Tennessee and Arkansas, a neat little species to detect in the dusk and a fitting climax to Long's and my last field-day together for several weeks.

Actually there was a little more collecting. The presses were full and needed overhauling and we were thoroughly tired, overheated and dehydrated; but in mid-afternoon all the plants were cared for and there were still three or four hours of daylight left. Persuading Long, who had lost more sleep, aqueous solutions and avoirdupois than I, that it was his duty to stay at home and get to bed in decent season, Carroll and I made as swift a journey as the traffic laws of the state would allow to reconnoitre new territory. Driving without stop until well south of Franklin, we went south on the main road toward the Carolinas but, finding the country immediately south of Franklin too much cleared or altered, we swung over to the Blackwater, near Oak Grove School, and crossed the draw-bridge at South Quay. The west bank of the river supports a cypress swamp, a habitat usually monotonous and unproductive. This one, however, is bordered by a thicket of *Cyrilla racemiflora*, which reaches its northern limit here or very near here (numerous old collections from about Franklin and reported by Ward from just south of Emporia); and there were splendid thickets of the handsome *Lyonia lucida* (Lam.) C. Koch,² which I

¹ SVENSON, RHODORA, xxxi. 185 (1929).

² Although *Cyrilla* has racemes of white flowers and the corollas of *Lyonia lucida* range from white to pink, I did not notice *Itea virginica* with them. The latter shrub is so generally abundant that its presence in or absence from a special habitat is

had not previously seen west of the Dismal Swamp. *Paspalum Bosci-anum* and the usual sedges of open argillaceous alluvium abounded, but I was looking for loose sand and a continuation southward of the pine barrens where we had found so much. Expressing my hopes to the draw-tender, I received the reassuring reply, accompanied by a general sweep of his arm toward Nansemond County: "Thar's a powerful lot of right smart sand over thar."

Proceeding in the general direction indicated, we took a sandy road southward toward Factory Hill, near the North Carolina line. Passing much farmed land, we eventually stopped where the wet thicket of the roadside was bordered with a rich vegetation, many of the species only rarely seen by us before; the one specially worth record being *Coreopsis gladiata* Walt., a southern species of "swamp and low pinelands," not previously known in Virginia. It was already so dark that we could make out the plants only by their silhouettes; but *Triodia flava*, var. *Chapmani* (Small) Fern. & Grise.¹ was so distinct against the horizon and a *Crataegus* with tiny leaves and with already red fruits about as broad as the leaves, was so evident at the borders of dry woods that I took them and registered the area as one for a visit next time. We reached the dormitory just before midnight, having driven 85 miles (and stopped for supper) after finishing the evening's botanizing.

It was mid-October before I could leave Cambridge again. Long met me at Richmond and Carroll was again ready to help us during our collecting (October 16-20). In Massachusetts and southeastern Pennsylvania the autumn had thus far been about normal; but at our first stop, in Chesterfield County, to collect mature *Eupatorium leucolepis* in the depression north of Swift Creek, we were disheartened. Frost had wilted nearly everything, and we must work against odds in seeing novelties among the blackened and frozen vegetation. The hot Coastal Plain, at least from Chesterfield to Greenville, Southampton and Surry Counties, was closing its summer abruptly; and collecting became mere gleaning of the few specialties still recognizable. We were three weeks late! In the pinelands northwest of Waverly even *Prenanthes autumnalis* Walt. often had its fresh flow-

ordinarily of little significance; except that in a much-used manual we are told of *Itea* that "This shrub often grows intermixed with other shrubs which produce an abundance of racemes of white or pale-pink flowers." *Cyrilla racemiflora* and *Lyonia lucida* supply the correct color-combination.

¹ RHODORA, xxxvii. 133 (1935).

ering heads decaying after frost-bite, but enough hardy individuals could be found to make a decent series. At the boggy depression there, where so many good things had earlier been found, *Gentiana Saponaria* was now flowering, and there was a colony of *Solidago graminifolia* var. *polycephala* Fern. (*S. polycephala* Fern.) at a new southern limit. Everywhere, whether in dry open places or in depressions, the splendid *Aster grandiflorus*, with small and firm leaves, loosely branching habit and superb large heads with royal-purple to roseate rays, abounded. For a species locally so abundant it has a very weak representation in northern herbaria, perhaps because of its very late flowering. Southeast of Ivor we looked over a wooded slope above a small stream. It will yield many species in early spring, for there was an assemblage of rich woodland types, among them *Uniola sessiliflora* Poir., which we had seen only in the very richest woods of Princess Anne County.

Coming the first afternoon, after the stops already recorded, to the area of pine barrens south of Zuni, we resolved to try new cross-sections in them. At the border of the loose white sand, where the plants of coastwise dunes had been found in August, the woods yielded another of the species of *Crataegus* which, in this part of Virginia, seem more recognizably definite than are the heterogeneous progeny of doubtful parentage "which have sprung up in the last three centuries 'on the derelict farms'" of New England and New York. Across the road, in the more definite pine barrens, we found *Zigadenus glaberrimus* more widely dispersed than we had supposed, and with it *Sarracenia flava*, which we had not seen in August. *Carphephorus tomentosus*, too, proved to be fairly abundant; and just at dusk, when we could hardly see, I came upon a single plant which puzzled me. Obviously of the *Polygonaceae*, it looked like *Polygonella*, but not any known in the "manual range." I had found one plant, and Long, for obvious reasons, wanting another, we sought in the increasing darkness on hands and knees, repeatedly returning, as a check, to the site of the one original plant. Finally, with Long's jocose reproof, "You've destroyed the locality," following me, I gave up and went as far as darkness would permit in search of something different. Returning after half-an-hour, I heard Long's gleeful shout: "I've put up 17 sheets so far." There, fully occupying one of the open plats of sand, and apparently only one,¹ was a solid carpet of *Polygonella*.

¹ In April, 1937, the plant was seen to be more generally dispersed in the area.

It proves to be *P. polygama* (Vent.) Engelm. & Gray, and this is the first station for it north of southeastern North Carolina (the Wilmington region). Again our great find was at twilight!

Returning on the second day, we stopped near Walters, to collect the fruit of *Ponthieva racemosa*, then drove to Joyner's Bridge to secure fruiting material of *Gerardia* and other difficult genera, which in August were too young. At the border of swampy woods the two gentians, *Gentiana Saponaria* and *G. parvifolia* (Chapm.) Britton, were growing, the range of the latter now extended inland from Princess Anne County and the Eastern Shore. It is a very handsome species, the dark-blue, short and broad corollas open at summit. When he studied *Gentiana* for the *Synoptical Flora* Asa Gray scarcely knew *G. parvifolia* (*G. Elliottii* Chapm., not *G. Elliottae* Raf.) and he certainly did not know that it extends northward almost to Maryland. From the original description of *G. Saponaria* L., "corollis . . . campanulatis ventricosis," and its "*Habitat* in Virginia" it has seemed as if Linnaeus might have had some *G. parvifolia* before him. This proves to be the case. My friends at the Linnean Herbarium and at the British Museum have supplied me with a beautiful series of photographs of the critical specimens. Happily, the sheet in Linnaeus's own herbarium marked by him *G. Saponaria* is that species as now understood; but the Clayton material which Gronovius had described "*Gentiana floribus ventricosus campanulatis erectis quinquefidis, foliis ovato-lanceolatis*" is a mixture of *G. Saponaria*, *G. villosa* and *G. parvifolia*. *Leersia*, too, was puzzling; surely, the genus is not yet clearly understood. At the margin of the Blackwater *Micranthemum umbrosum* (MAP 8) was flowering, the prostrate mats with their tiny flowers hidden from above, borne from the axils and projecting into the mud; and, in collecting this very neat species at its second station in Virginia, we pulled in, as a stranded "weed," a bit of *Cynoctonum Mitreola*.

Driving into Franklin for lunch, we were struck by the superabundance, about waste places or in open lots at Lee's Mill and across the river in Franklin, of *Tagetes minuta* L., a tropical pungent-aromatic annual of South America, reported by Small as naturalized in North Carolina. There is enough near Franklin to supply all the herb gardens of the country. And with *Tagetes* a *Cyperus* new to us was abundant: *C. globulosus* Aubl.,¹ another tropical species here evidently adventive.

¹ See Fernald & Griscom, RHODORA, xxxvii. 153 (1935).

Driving toward Factory Hill, we reached the point where Carroll and I had been forced by darkness to quit in August. With *Coreopsis gladiata* one of the always puzzling species of *Helenium* was growing; and at the border of dry woods there was a very slender *Andropogon* of the group with *A. Elliottii*. It puzzled us, so we collected 15 sheets of it and now we are glad that we did. It is *A. Elliottii* var. *gracilior* Hack. Small, treating it as *A. gracilior* (Hack.) Nash, assigns it the range: "Fla. to Miss." Our plant seems quite like the Florida type. Coming to the cypress swamp which borders Somerton Creek we ventured in, although it was already getting dark. While I was puzzling over a *Polygonum*, as yet unidentified, Long picked up a couple of sterile plants, uprooted by hogs, of *Dryopteris celsa* (Wm. Palmer) Small, the isolated southern fern, allied in some characters to *D. Goldiana*, in others to *D. cristata*, but abundantly distinct. Restricted to cypress swamps, it has apparently not been much known in Virginia outside the Dismal Swamp. Consequently we were not satisfied with the sterile and broken material the hogs had provided for us. Search for fifteen minutes outside the hog-wallow yielded a large fruiting clump at the base of a cypress; and in thankfulness we carefully set the two rescued roots in a safe place.

On the 18th, most fortunately, Smart and one of the zoologists of his department were able to join us. It was two months since we had been on the *Sarracenia flava* bog southeast of Petersburg, so we decided to return there. This time we got into a section of it which we had not previously visited and there we at once came upon *Eriocaulon decangulare*. With it *Lobelia glandulifera* (MAP 20) was growing and also *Scleria setacea* Poir., previously known to us in Virginia only in Princess Anne and Northampton Counties; and *Agrostis elata* Pursh (MAP 30), quite like the original material from southern New Jersey, impressed us with a character which, along with several others,¹ clearly distinguishes it from *A. perennans*, with which Hitchcock united it. In the autumn the latter makes abundant leafy basal shoots, whence, presumably, its specific cognomen; in the former such shoots seem not to develop. *Aster concolor*, now beautifully flowering, was very abundant, both in the dry clay above and in damper clay and peat of the bog. Very variable in size of leaf, it led us to hope that the variation is significant; but apparently it is not. In the drier open fields it is accompanied by the handsome purple *Leptoloma cognatum*,

¹ See Fernald, RHODORA, xxxv. 211 (1933).

a species we had not previously met on the Coastal Plain of Virginia and which Hitchcock (*Manual*) does not map from the state; and in crossing the wetter part of the bog we were impressed by an *Andropogon* different from any we had seen. Fortunately we took some, for it is a perfect match for authentic material of *A. Mohrii* Hackel, the first collection from north of North Carolina.

A brief visit to the spring-fed wooded bog at Coddysore yielded no novelties; so, wishing to get fruit of the *Lechea* near Emporia, which had puzzled us by its late flowering, we drove directly there, with just time enough before dark to secure the needed but disappointing series (see p. 352) and to collect *Muhlenbergia capillaris*, one of the rarest species in the northeastern states, which not one of us had ever seen growing.

Returning the next afternoon to Factory Hill, we proceeded to the North Carolina line, swung slightly into that state and back into Virginia, ending our afternoon's collecting southwest of Whaleyville. South of Factory Hill there are sandy pine woods, which, earlier in the season and with time for proper exploration, would yield great results or, at least, would show what great results could have been achieved before the interference of Man. A few shrubs of *Asimina parviflora*, with leaves even broader than the most extreme in the Gray Herbarium, a single clump of *Amianthium muscaetoxicum* and two individuals at the border of wetter woods of the superb *Gentiana Porphyrio*, the first, at least in the Gray Herbarium, from between South Carolina and southern New Jersey except, of course, from Wilmington, North Carolina, indicated what had been here before the inevitable and, to the native flora, ruinous ditching. Mildly impressed by the very full and scarcely lobed leaves of a Black Oak, *Quercus velutina*, we unenthusiastically picked some sprigs. That was fortunate for they closely match authentic specimens of var. *missouriensis* Sarg., of Missouri and Arkansas. Similarly, near Whaleyville, where we followed a side-road through what had been extensive boggy woods, the woods are now dried out, with only tell-tale remnants of *Panicum mattamuskeetense* (MAP 31) to show that they were once wet; and at the border of the deep roadside trench just enough individuals of the old bog flora are left to be pathetic remnants of real colonies of *Rhexia ciliosa*, *Hypericum setosum*, *Prenanthes autumnalis* and other fine species which our descendants may never have a chance to see in their native haunts.

There was only one day more and we had not once set foot on a tidal shore nor in a brackish marsh or fresh estuary. Brackish and salt marshes seemed to be plenty in the county of Surry, slightly north of Waverly, where we had earlier found a hospitable and comfortable home for our work. Seeking shelter there for the night, we went in the morning directly to Claremont Wharf, on the James River. The sandy shore there was almost bare of vegetation, though we did get a bit of *Lilacopsis chinensis*, so we drove on to the beach outside Sunken Meadow, an area which will repay prolonged investigation. The steep banks of the James here have a good Alleghenian flora and back of the beach or in the thickets such continental types as *Astragalus canadensis* and *Smilax hispida* were fruiting. A few days earlier we had tasted the berries of *Smilax tamnifolia* and found their thin pulp to have the flavor and sweetness of dates. Not so the black berries of *S. hispida*; they are intensely bitter. The long pond shut off by the beach and running far up Sunken Meadow will yield good things. Where we saw it, its waters were covered with *Wolffia punctata* and *Wolffiella floridana*, just as we had found them together on the Eastern Shore.¹ A *Bidens* of the perplexing *lacvis*-group abounded with the tropical *Polygonum densiflorum* Meisn.²

This area not supplying the brackish marshes and estuarine swales we had hoped for, we went on to Swann Point, thence by an unimproved wood-road to Cross Creek Landing. There we gazed upon a typical salt marsh, with impenetrable miles of *Spartina* and other uninteresting plants. Seeing from a tree-top a margin of the salt marsh which was not too dense, we there tried our luck. Everything had been frosted; but one gigantic *Panicum*, with old fruit, is puzzling enough to suggest the importance of a visit there earlier in the season another year. And we certainly shall wish younger and better specimens of *Verbena scabra* which was here, dead-ripe but with all the crucial characters, which Dr. Lily M. Perry, monographer of the genus, has verified; for, although examining the material in all the important herbaria of the country, she has never before seen the tropical *V. scabra* from north of Wilmington, North Carolina.³

Wishing to get back to the alluvial bottoms and banks of the Notoway, where in August we found so many interesting plants, we drove after lunch to Courtland, stopping south of Waverly for some

¹ See RHODORA, xxxviii. 400 (1936).

² See Weatherby, RHODORA, xxv. 20 (1923).

³ See RHODORA, xxxviii. 442 (1936).

collections of a strange *Chrysopsis* and of other puzzling plants. The border of the cypress swamps above the bridge crossing the Nottoway yielded fine fruit of several species which we had collected in the summer, but the open shores, where we expected so many species, had been severely chilled. Brown and limp, the plants were difficult to distinguish, though we worked until dark among them. Singularly enough, the tropical weeds, *Tagetes minuta* and *Heliotropium indicum*, were quite green, with abundant fresh flowers; but the indigenous herbs of shores, bars and sand-spits, such as *Eragrostis hypnoides*, which is native as far north as Maine, Quebec, Ontario and British Columbia, were brown, lifeless, frost-killed rags. Summer, even in southernmost Virginia, was over and it was time to go home.

(To be continued)

COCCOMYXA IN THE UNITED STATES.—Both Collins in Tufts Coll. Stud. 4(7): 77 (1918) and Smith in *Fresh Water Algae of the United States*, 368 (1933) based their reports of *C. dispar* Schmidle, Ber. d. d. bot. Ges. 19: 23 (1901), upon the single specimen from New Hampshire cited below. What is evidently the same alga was found during the summer of 1936 forming an abundant greenish stratum on woodwork in the spray of waste water from Cahoon's Ice House near Falmouth, Massachusetts. This appears to check in every respect with the material authenticated by Schmidle in Migula, Cryptog. Austr. & Helvet. exs. 26 & 27: 88, 'Hirschberg bei Schmalkalden, Thüringen, T. Reinstein, Oct. 1905' (Herb. W. R. Taylor, Herb. N. Y. Bot. Gard.). Prof. G. M. Smith has also examined a portion of this Falmouth collection. Specimens seen from the United States:

NEW HAMPSHIRE: on tree trunks, Chocorua, W. G. Farlow, Sept. 1916 (Farlow Herb.). MASSACHUSETTS: subaerial on sides of trough in spray of waste water, Ice Pond, Falmouth, E. T. Rose & Drouet 1900, 24 July 1936 (Herb. M. B. L., Herb. F. Drouet, Farlow Herb., Herb. W. R. Taylor, Herb. Yale Univ., Herb. N. Y. Bot. Gard., Herb. Mo. Bot. Gard., G. M. Smith, G. W. Prescott). NEW YORK: on log in woods, Orient, R. Latham, 20 June 1914 (Herb. N. Y. Bot. Gard.). PENNSYLVANIA: rocks above Chelton Av. entrance, Wissahickon Creek, Philadelphia, W. R. Taylor, 17 Oct. 1920 (Herb. W. R. Taylor).—FRANCIS DROUET, Marine Biological Laboratory, Woods Hole, Mass.



Fernald, Merritt Lyndon. 1937. "CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD UNIVERSITY—NO. CXX. LOCAL PLANTS OF THE INNER COASTAL PLAIN OF SOUTHEASTERN VIRGINIA Part I. Account of a Summer's Collecting." *Rhodora* 39, 321–366.

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