

very good to make hedges and inclosures for fields — Also in the section between the Work House and Salt House, adjoining the Pride of China Plants, and between the rows in which the Carolina laurel seeds had been sowed, 46 of the Pistatia nut in 3 rows — And in the places where the Hemlock pines had been planted and were dead, Et. & Wt. of the Garden gates, the seeds of the Piramidical Cyprus 75 in number — all of which with others were presented to me by Mr. Michaux, Botanist, to his Most Christian Majesty.”

July 1st.

“Planted 4 of the Ramnus Tree (an evergreen) one on each side of the Garden gates — a peg with 2 notches drove down by them (Pegs No. 1 being by the Pyramidical Cyprus) — also planted 24 of the Philirea latifolio — (an evergreen shrub) in the Shrubberies by Pegs No. 3 — and 48 of the Cytire — a tree produced in a cold climate of quick growth, by pegs No. 4 — All these plants were given to me by Mr. Michaux.”

ARNOLD ARBORETUM.

## NOTES ON THE GENUS SABATIA.

S. F. BLAKE.

(Plate 112.)

1. SABATIA DIFFORMIS (L.) Druce (*S. lanceolata* (Walt.) T. & G.).— *Swertia difformis* L. Sp. i. 226 (1753). *Chironia lanceolata* Walt. Fl. Car. 95 (1788). *Sabbatia corymbosa* Baldw. ex Ell. Sk. i. 283 (1817). *Sabbatia lanceolata*<sup>1</sup> (Walt.) T. & G. ex Gray, Man. ed. 1. 356 (1848). *Sabbatia difformis* (L.) Druce, Bot. Exch. Club Rep. 1913, iii. pt. 5, 422 (1914), as to name-bringing synonym only.— The Clayton type of *Swertia difformis* L., which was based on Gronovius's "Gentiana foliis linearibus acuminatis, pedunculis longissimis nudis unifloris oppositis" (Fl. Virg. ed. 1. 30 (1739)), is in the British Museum and

<sup>1</sup> The name *Sabbatia lanceolata* first occurs in Raf. Fl. Tell. iii. 30 (1836), but is there merely a nomen without synonym.

consists of the uppermost portion of a specimen of the plant which has long been known as *Sabbatia lanceolata* (Walt.) T. & G., with long opposite linear-filiform-bracted one-flowered peduncles, linear-subulate slightly fleshy calyx-lobes 4–6 mm. long, flowers all 5-parted except the terminal which is 6-parted, and oblong-lanceolate acutish petals 11–12 mm. long (white, according to Clayton). The sheet is marked “D. Clayton ex Virginia, *Swertia corollis quinquefidis, terminali sexfida, pedunculis longissimis, foliis linearibus*, Linn. Sys. gen. 284, n. 2”; below is another label, crossed out on the sheet, similar except that the reference is to “Linn. Spec. 226” instead of to the Genera. Although the specimen does not bear Clayton’s number 171, cited by Gronovius for the species, it may safely be taken as type in view of its entire agreement with the very definite points of the Gronovian and Linnaean descriptions. The name *Sabatia difformis*, taken evidently from the inconstant difference in number of parts of the lateral and terminal flowers, must accordingly replace *S. lanceolata*. *Swertia difformis* L. has long been referred with more or less doubt by authors to *Sabatia Elliottii* Steud., although its published character of “pedunculis . . . oppositis” should have prevented such confusion, since *S. Elliottii* (*S. paniculata* Ell., not Pursh) belongs to the group with alternate branches. Its identity with *S. lanceolata* was however long ago noted by Grisebach in A. DC. Prod. ix. 49 (1845), probably following Pursh, Fl. i. 138 (1814), who says: “This [i. e. *S. paniculata* (Michx.) Pursh, with the varieties  $\alpha$ . *latifolia* Pursh (= *C. lanceolata* Walt., *Sw. difformis* L.) and  $\beta$ . *angustifolia* Pursh (= *S. paniculata* as now restricted)] certainly is the long lost *Swertia difformis*, as the specimens in the Herbarium of Clayton, now in possession of Sir Joseph Banks, sufficiently prove.” What the “specimens” were, other than the one under discussion, is not evident, but the use of the plural may have been simply another slip on the part of Pursh. Certainly this specimen is the only one of Clayton’s few *Sabatias* now extant which Pursh could by any possibility have referred to his *S. paniculata*.

The name *Sabatia* (*Sabbatia*) *difformis* has recently been published by Druce, in a long list of new combinations among which American botanists will be somewhat surprised to discover *Nemopanthus mucronata* [(L.) Trel. 1892] and *Chiococca alba* [(L.) Hitch. 1893] indicated as new, among others; but his unfortunate failure to examine the type of the species leads him to identify the name with *S. Elliottii*

Steud., with which, despite the reference in the Index Kewensis, it has no connection whatever.

2. *SABATIA CAMPANULATA* (L.) Britton (*S. gracilis* (Michx.) Salisb.). — *Chironia campanulata* L. Sp. i. 190 (1753). *Chironia gracilis* Michx. Fl. i. 146 (1803). *Sabbatia gracilis* (Michx.) Salisb. Par. Lond. t. 32 (1806). *Sabbatia campanulata* (L.) Torr. in Griseb. Gentian. 120 (1839), as syn.; Britton, Mem. Torr. Club, v. 259 (1894).— The name *Sabatia campanulata* has been in use by many American botanists for some years, but in the seventh edition of Gray's Manual, 655 (1908) the name *S. gracilis* is employed, and *S. campanulata* Torr. is referred to it with a mark of interrogation, presumably following the Synoptical Flora, ii. pt. 1. 115 (1878). Dr. Gray's hesitation to adopt Linnaeus's name seems to have been due chiefly to the fact that the habitat of the plant was given as "Canada" in the Species Plantarum. No locality is indicated on the type sheet in the Linnaean Herbarium, however, and a specimen from Kalm, perhaps a cotype, in the Leche Herbarium now incorporated in the British Museum collections, is marked simply "America," so that Linnaeus's reference of the species to Canada is obviously an error, due doubtless to the fact that so large a proportion of Kalm's plants came from Canada. The specimen from the Leche Herbarium is also authentic for *S. gracilis* Salisb., as it bears the name "gracilis Michx." followed by Salisbury's initials. Both sheets represent *S. gracilis* of Gray's Manual, a name which must be replaced by *S. campanulata*. The large-flowered variety from Florida should take the name *SABATIA CAMPANULATA* (L.) Britton, var. **grandiflora** (Gray) Blake (*Sabbatia gracilis* Salisb., var. *grandiflora* Gray, Syn. Fl. ii. pt. 1, 115 (1878). *Sabbatia grandiflora* (Gray) Small, Fl. S. E. U. S. ed. 1. 928 (1903)).

In Small's Flora the characters of *S. campanulata* and *S. stellaris* appear to be interchanged, so far as may be gathered from the somewhat contradictory key and descriptions. In the key to species (p. 927) *S. stellaris* is said to have "calyx-lobes fully as long as the corolla," which would indicate *S. campanulata*; but in the description we find: "calyx glabrous; lobes narrowly linear, 8–12 mm. long, acute, fully  $\frac{1}{2}$  as long as the corolla-lobes"; and again in the same sentence: "corolla pink or white; lobes oblong or oblong-spatulate, rarely surpassing the calyx-lobes." *S. campanulata* according to the key has corolla lobes 1–1.5 cm. long; but the description reads: "calyx glabrous; lobes . . . 8–12 mm. long; corolla . . . lobes . . . about twice as long as the calyx-lobes."

3. *SABATIA FOLIOSA* Fernald (*S. Harperi* Small). After examining cotypes of both these species, I have been unable to discover sufficient difference between the two to warrant their separation. *S. foliosa* was originally described (Bot. Gaz. xxxiii. 155 (1902)) as having "leaves . . . lanceolate to oblong-lanceolate . . . 2.5 to 6 cm. long, 0.5 to 1.2 cm. broad," "calyx with lanceolate foliaceous lobes 1.2 to 2 cm. long," and "corolla . . . with . . . oblanceolate remote lobes 1.3 to 2.5 cm. long." The species was based primarily on Curtiss 5928 from Florida, but to it were also referred plants collected by J. D. Smith in South Carolina. Later, Harper (Bull. Torr. Club, xxx. 338 (1903)) reported it from Georgia (*Harper* 964, 1196), his specimens being identified by Fernald. On these two numbers Small's *S. Harperi* (Fl. S. E. U. S. 928, 1336 (1903)) was based. The diagnostic characters of the two supposed species, as indicated by Small's descriptions, are as follows: *S. Harperi*: "leaf-blades lanceolate or oblong-lanceolate . . . 1.5–3.5 cm. long . . . partly clasping . . . calyx . . . lobes slightly broadened upward, about  $\frac{1}{2}$  as long as the corolla . . . : corolla . . . lobes . . . 1.5–2.5 cm. long." *S. foliosa*: "leaf-blades . . . linear-oblong to linear-lanceolate or almost linear, . . . 2–6.5 cm. long, . . . sessile . . . : calyx . . . lobes linear, . . . as long as the corolla or nearly so . . . : corolla . . . lobes 1.2–2.5 cm. long." The non-existence of the differential characters here adduced is shown by the following notes taken from an examination of *Harper* 964 (cotype of *S. Harperi*, in British Museum) and *Curtiss* 5928 (cotype of *S. foliosa*, in Kew Herbarium). *Harper* 964: leaves (middle and upper) oblong to oblong-lanceolate, slightly clasping, 2.5–3.5 cm. long, 8.5–15 mm. wide; calyx-lobes spatulate-linear, broadened upwardly, 13.5–15 mm. long, 1.4–2 mm. wide; corolla-lobes 14.5–17.5 mm. long (corolla including tube 2.1 cm. long). *Curtiss* 5928:<sup>1</sup> leaves narrowly oblong to narrowly oblong-lanceolate ("linear-oblong to . . . almost linear," Small, l. c.), 3.8–5.3 cm. long, 8.5–10.5 mm. wide; calyx-lobes spatulate-linear, broadened upwardly, unequal, 10.5–20 mm. long, 1.8–3.3 mm. wide; corolla-lobes 15–16 mm. long (whole corolla 2 cm. long). Since neither the alleged differences in leaves or those in calyx are borne out by cotypes of the two species concerned, *S. Harperi* must be relegated as a synonym to *S. foliosa*, which has a year's priority.

<sup>1</sup> These measurements are taken from a well-developed specimen. An undeveloped one-flowered plant 1.3 dm. high has calyx-lobes 9.5–10 mm. long, and ovate-oblong middle leaves 2–2.2 cm. long, 5–7 mm. wide.

4. *SABATIA obtusata* n. sp., perennis valde stolonifera caule erecto leviter biangulato simplice vel subsimplice 2–2.5 dm. alto uni-vel bi-floro; foliis infimis oblanceolatis vel spathulatis subacutis 2.5–3.5 cm. longis 3–7 mm. latis; caulinis tenuibus ca. 12-jugis oblongis vel ovalibus apice rotundatis sessilibus non amplexantibus 1.5–2.5 cm. longis 3.5–10 mm. latis internodia subaequantibus, costa basi incrassata albida venis lateralibus 1–2-jugis inconspicuis; pedunculis 1–3.5 cm. longis; calycis tubulo subscarioso ca. 20-nervio 1.5–2.5 mm. alto, laciniis 9–10 lineari-lanceolatis acutis trinerviis planis sursum paulum ampliatis 5–11 mm. longis 0.6–1.6 mm. latis; corollae laciniis 9–10 cuneato-lanceolatis obtusis roseis basi macula aurea rubromarginata praeditis 1.2–2.2 cm. longis 3–6 mm. latis; stylo 2 mm. longo; stigmatibus 6 mm. longis.

Erect stoloniferous perennial, usually simple, one- or two-flowered, 2–2.5 dm. high; lowest leaves oblanceolate to spatulate, subacute, 2.5–3.5 cm. long, 3–7 mm. broad; stem-leaves thin, about 12 pairs, oblong or oval, rounded at tip, sessile but not clasping, about equalling the internodes, 1.5–2.5 cm. long, 3.5–10 mm. broad, the midrib whitish and conspicuous, the 1–2 pairs of lateral veins obscure; peduncles 1–3.5 cm. long; calyx-tube subscariosous, about 20-nerved, 1.5–2.5 mm. high; the segments 9–10, lance-linear, acute, slightly broadened upwardly, flat, 3-nerved, 5–11 mm. long, 0.6–1.6 mm. broad; corolla-lobes 9–10, wedge-lanceolate, obtuse, rose-color with a red-bordered golden eye, 1.2–2 cm. long, 3–6 mm. broad; style 2 mm. long; stigmas 6 mm. long.

GEORGIA: shallow water near Lumber City, 18 July 1905, *Biltmore Herbarium* (TYPE SHEET in British Museum).

A rather strongly marked new *Sabatia*, distinguished at once by its very short round-tipped leaves about equalling the internodes; related to *S. dodecandra* (L.) BSP., from which it differs in its leaves and lower simple freely stoloniferous stem; and to *S. foliosa* Fernald (*S. Harperi* Small), which has lanceolate to lance-oblong, subobtuse and slightly amplexicaul leaves, 2.5–6 cm. long, and considerably longer calyx-lobes (mostly 1.2–2 cm. long).

5. *SABATIA capitata* (Raf.) n. comb. (*S. Boykinii* Gray).—*Pleienta capitata* Raf. Fl. Tell. iii. 30 (1836). *Sabbatia Boykinii* Gray in Chapm. Fl. S. E. U. S. ed. 1. 354 (1860). *Lapithea Boykinii* (Gray) Small, Fl. S. E. U. S. ed. 1. 929 (1903).—Rafinesque's *Pleienta capitata*, described from the Unaka and Cherokee Mountains along the Tennessee-North Carolina border, close to Whitfield County, Georgia, where *Sabatia Boykinii* has been collected, is evidently identical with the latter species. Rafinesque's description, published in the rare *Flora Telluriana*, may be quoted: "498. *Pleienta capitata* Raf. caule

rigido tereto bisulcato, fol. remotis obl. lanceol. acutis uninervis, inferis ellipt. fl. term. capit. involucr. sub 8 andris, cal. lanceol. cor. brevior, lac. cor. spatul. obt.—Unaka and Cherokis mts. very distinct sp. next to *Pl. gentianoides*, leaves uncial, fl. white or incarnate in sessile heads of 3 to 5, involucre of 4 leaves" (Raf. l. c. 30–31). The following specimens have been examined: GEORGIA: eastern base of Dick's Ridge, alt. 305 m., Whitfield Co., 27 July 1900, *P. Wilson* 142 (Br. Mus.); woods east of Taylor's Ridge, alt. 350 m., Whitfield Co., 26 July 1900, *P. Wilson*, 134 (Kew); near Pigeon Mt., alt. 595 m., Walker Co., 1 Aug. 1900, *P. Wilson* 172 (Kew); ALABAMA: Blount Co., Oct. (fruiting), *Rugel* (Br. Mus.). There are also two specimens without locality from Schweinitz in Kew Herbarium, bearing an unpublished name indicating the same habitat as that originally ascribed by Rafinesque to the species. Gray's *S. Boykinii* was based on specimens collected by Dr. Boykin in "middle Georgia." The plant has not been collected in Tennessee in recent years, and it is not improbable that Rafinesque's specimens came from Georgia. Harper has reported it (Bull. Torr. Club, xxviii. 478 (1901)) from Alabama (*Pollard & Maxon*) and from several localities in northwestern Georgia.

6. Rafinesque's genus *Pleienta*<sup>1</sup> (l. c. 30 (1836)) included the *Sabatias* with 7–12-merous flowers, and had as "type the *Chl. dodecandra* L." It is thus strictly synonymous with *Sabatia* Adans. (Fam. ii. 503 (1763)), based on the "*Gentiana floribus duodecim petalis, foliis distinctis*" of Gronovius (Fl. Virg. ed. 1. 29 (1739)), which is *S. dodecandra* (L.) BSP. The *Pl. gentianoides* with which Rafinesque compared his new species *Pl. capitata* is evidently *Sabatia gentianoides* Ell., for which together with *S. Boykinii* (i. e. *S. capitata*) the genus *Lapithea* Griseb. is maintained by some. This was first proposed as a section (*Pseudochironia*) of *Sabatia* by Grisebach in 1839, founded on *S. gentianoides*, and characterized by "Antherae uno cyclo tortae, speciosae! Flores subsessiles, capitati," in opposition to the section *Eusabbatia*, including the other species of the genus, with "Antherae demum recurvae. Flores pedicellati, aut paniculati, aut caule dichotomo solitarii." In Grisebach's revision of the family in the *Prodromus* the section was raised to generic rank as *Lapithea*,

<sup>1</sup> "497. PLEIENTA Raf. (more added) *Sabbatia* Ad. non alis. diff. 496, cal. 7–12part. stam. 7–12 stylo sepe recto &c. — Although this G. chiefly depends on extra numbers, it is a very natural one, prolific also of Amer. sp. It chiefly differs from *Chlora* by the unequal calix. Type the *Chl. dodecandra* L. which included 12 blended sp. see my monograph N. Sp. *Pl. leucantha, rigida, flexuosa, fasciculata, capitata, &c.*"

which is retained in Bentham & Hooker's *Genera Plantarum* and in Small's *Flora*. It seems to the writer that the differences in anthers and inflorescence are not sufficient to justify the maintenance of *Lapithea* as a genus, but that the group is better treated as of subgeneric value. The genus may be further divided into sections and subsections in the following manner:

#### SYNOPSIS OF SABATIA ADANS.

Subg. I. **Eusabatia** (Griseb.) n. comb.—*Sabbatia* sect. *Eusabbatia* Griseb. *Gentian.* 120 (1839).—Flowers solitary, scattered, or cymose-panicled, pedunculate. Anthers recurved or spirally coiled.

Sect. 1. **Pentapetala**. Floribus 5(rare 6-7)-meris minoribus. Type-species *S. angularis* (L.) Pursh.

Subsect. A. **Angulares**. Ramulis oppositis; calyce non costato.

- |                                    |   |
|------------------------------------|---|
| 1. <i>S. macrophylla</i> Hook.     | 4. <i>S. paniculata</i> (Michx.) Pursh. |
| 2. <i>S. angularis</i> (L.) Pursh. | 5. <i>S. brachiata</i> Ell.             |
| 3. <i>S. difformis</i> (L.) Druce. |   |

Subsect. B. **Campanulatae**. Ramulis alternis; calyce non costato.

- |                                       |  |
|---------------------------------------|--|
| 6. <i>S. Elliottii</i> Steud.         | 9. <i>S. simulata</i> Britton.                 |
| 7. <i>S. stellaris</i> Pursh.         | 10. <i>S. Purpusii</i> Brandegee. <sup>1</sup> |
| 8. <i>S. campanulata</i> (L.) Britton | 11. <i>S. Palmeri</i> Gray.                    |
| 8b. " " v. <i>grandiflora</i>         | 12. <i>S. maculata</i> (Benth.) Benth & Hook.  |
| (Gray) Blake.                         | 13. <i>S. calycina</i> (Lam.) Heller.          |

Subsect. C. **Campestres**. Ramulis alternis; calyce valde costato.

- |                                |                                 |
|--------------------------------|---------------------------------|
| 14. <i>S. campestris</i> Nutt. | 16. <i>S. arenicola</i> Greenm. |
| 15. <i>S. carnosa</i> Small.   |                                 |

Sect. 2. **Pleienta** (Raf.) n. comb. Floribus 8-12-meris majoribus.—*Sabbatia* subg. *Plurimaria* Raf. *Med. Fl.* ii. 76 (1830) in part; *Pleienta* Raf. *Fl. Tell.* iii. 30 (1836), in part.

- |                                |  |
|--------------------------------|--|
| 17. <i>S. foliosa</i> Fernald. | 19. <i>S. dodecandra</i> (L.) BSP.     |
| 18. <i>S. obtusata</i> Blake.  | 20. <i>S. decandra</i> (Walt.) Harper. |

Subg. II. **Pseudochironia** (Griseb.) n. comb.—Flowers sessile in terminal and axillary bracteate heads of 1-7. Anthers slightly twisted laterally.—*Sabbatia* sect. *Pseudochironia* Griseb. *Gentian.* 125 (1839). *Lapithea* Griseb.

<sup>1</sup> Perhaps not distinct from *S. Palmeri*, of which no specimen has been available for comparison.

in A. DC. Prod. ix. 48 (1845). *Sabbatia* subg. *Plurimaria* Raf. l. c. in part.  
*Pleienta* Raf. l. c. in part.

21. *S. gentianoides* Ell.

22. *S. capitata* (Raf.) Blake.

LONDON, ENGLAND.

#### EXPLANATION OF PLATE 112.

Fig. A. *Sabatia difformis* (L.) Druce. 1. Type,  $\frac{1}{2}$  nat. size. 2. Flower, about  $1\frac{1}{2}$  nat. size. (British Museum.)

Fig. B. *S. campanulata* (L.) Britton. Type,  $\frac{1}{2}$  nat. size. (Linnaean Herbarium.)

Fig. C. *S. obtusata* Blake. 1. Type,  $\frac{1}{2}$  nat. size. 2. Calyx, about  $1\frac{1}{2}$  nat. size. (British Museum.)

### CAREX TUCKERMANI NIAGARENSIS; A NEGLECTED SEDGE.

C. P. SMITH.

WHILE in Niagara county, New York, in the summer of 1911, I collected a variety of *Carex* which is not, at least to my satisfaction, accounted for in our present-day floras. Every effort to determine the form led to *C. Tuckermani* Dewey; but from that species, as illustrated and described, this plant differs in certain apparent characters. Accordingly, after referring to the original description and illustration, and examining the material in the *C. Tuckermani* covers of the Cornell University and the U. S. National Herbaria, I have decided to make record of the plant as follows:

**CAREX TUCKERMANI niagarensis** var. nov. a forma typica differt culmis late patentibus; spicis nutantibus, deorsum floribus plus minusve laxis; perigyniis latissime ovoideis vel deltoideis, basi plerumque obliquis planisque.

Differs from the typical form in its widely spreading culms, nodding spikes with flowers more or less scattered below, triangular-ovoid, deltoid, or even rhomboidal perigynia with the base commonly oblique or truncate.

My No. 2438, 27 August, 1911, Youngstown, N. Y., is taken as the type collection. No. 2554 is also typical, being from "West Hill," Ithaca, N. Y., 28 June, 1912, matured akenes having been subsequently