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NOTES ON SOME ROSES IN THE GRAY'S MANUAL RANGE

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IN an attempt to arrive at a satisfactory evaluation and disposition of the various taxa of *Rosa* occurring in Missouri, it became obvious that in both the latest Gray's Manual and in Gleason's *Flora* several taxa were not treated. Fernald states (p. 868) that "Only the clearer-cut species and varieties are here included. Many scores of recently proposed 'species' are omitted until their relative stability is better demonstrated." The following names: *R. conjuncta* Rydb., *R. petiolata* Rydb., *R. Bushii* Rydb., *R. Aucuparia* Rydb., *R. subserrulata* Rydb., *R. rudiuscula* Greene, and *R. Palmeri* Rydb. were based originally upon Missouri specimens. Two others, *R. polyanthema* Lunell and *R. relictata* Erlanson, were either based in part on or have been identified with Missouri material, and their status is of present interest.

Of this assemblage Fernald recognized *R. conjuncta* as a valid taxon. He relegated *R. Bushii* to synonymy under *R. arkansana* var. *suffulta*, a course of procedure with which the present author is in full agreement. The other names, however, have not been taken up in either of the above manuals, and it becomes necessary to dispose of them in relation to existing taxa.

In an effort to untangle these poorly defined and not clearly cut taxa, the various Missouri species described by Rydberg were studied from material borrowed from the New York Botanical Garden. I am deeply grateful to Mr. Frank Mac Keever, Custodian of the Herbarium, and to Dr. David D. Keck, Head Curator, for their courtesy in making this material available for my study.

As a result of these studies, it appears that none of the taxa listed above can be maintained, and that Fernald's treatment in

the New Manual is, for the most part (with the exception of *R. conjuncta*), wholly adequate for them, while Gleason's treatment is much more superficial and fails to account for a number of names entitled to recognition. In the following summary, my own opinions of the taxa are given.

Rosa Bushii Rydb., *R. conjuncta* Rydb., *R. polyanthema* Lunell. = *R. ARKANSANA* var. *SUFFULTA* (Greene) Cockerell.

Rosa Aucuparia Rydb., *R. petiolata* Rydb. = *R. VIRGINIANA* Mill.

Rosa relictata Erlanson = *R. ARKANSANA*, var. *SUFFULTA* (Greene) Cockerell.

Rosa palmeri Rydb. = *R. CAROLINA* var. *VILLOSA* (Best) Rehder.

Rosa subserrulata Rydb. = *R. CAROLINA*, f. *GLANDULOSA* (Crépin) Fern.

Rosa rudiuscula Green, in my opinion, may best be abandoned as a name of confusion.

ROSA AUCUPARIA Rydb.

The type of this species (*Bush 5866* from Dumas, Missouri), deposited in the herbarium of the New York Botanical Garden, has the stout, elongated, rather broad-based prickles characteristic of *R. virginiana*. With respect to the corymbose inflorescence, broad adnate portion of the upwardly dilated stipules, height of stems, number, shape, size, and glabrosity of leaflets, the type specimen can be matched by numerous collections of *R. virginiana*, with which it may be judged as conspecific. Besides this collection, Bush made others from Clark County, Missouri (no. *9145a* from Medill) which can also be assigned to *R. virginiana*.

ROSA BUSHII Rydb.

I am in agreement with Fernald in reducing this name to synonymy under *R. arkansana* var. *suffulta* (Greene) Cockerell. In the original description, it was characterized by Rydberg (N. Am. Fl. **22**, pt. 6: 485. 1918) as having a "decidedly pear-shaped hypanthium" as contrasted with a "globose or slightly pear-shaped" hypanthium. This character, however, cannot differentiate it from various specimens annotated as *R. suffulta* [*R. arkansana* var. *suffulta*] by Mrs. Erlanson. One specimen, *Bush 3970a*, collected in flower from Courtney, Missouri, labeled by Rydberg as *R. Bushii*, shows an hypanthium which can be matched by various specimens annotated as *R. suffulta* by Mrs. Erlanson (i.e. *Gates 3070* from 3 km. north of Janesville, Wis-

consin), and by a fragment of the type specimen of *R. suffulta* (*Vasey* from Las Vegas, New Mexico) in the herbarium of the New York Botanical Garden. The pear-shaped hypanthium acute at base in fruit can be matched by such fruiting specimens of *R. arkansana* var. *suffulta* as *Moodie 998* from the Vicinity of Rosedale, Alberta, and *Arsène 17732* from the vicinity of Las Vegas, New Mexico. In the specimens annotated *R. Bushii* by Rydberg there is variation in size of leaflets from a small size (in the type specimen) to a larger size (in various flowering specimens).

ROSA CONJUNCTA Rydb.

The type specimen (*Bush 101* from Atchison Co., Missouri) was collected in an area where subsequent and additional material, labeled *R. suffulta*, has been taken. In his original description of *R. conjuncta* Rydberg states (N. Am. Fl. **22**, pt. 6: 505. 1918) that the sepals in fruit are "persistent but reflexed," using this character, together with the glaucous nature of the plant, to separate *R. conjuncta* from *R. suffulta*, in which the sepals are stated (*ibid.*) to be "erect in fruit" and "plant not glaucous." Under *R. suffulta* Rydberg makes the statement (*loc. cit.* p. 505) that the sepals are "after anthesis ascending and *usually* persistent or *tardily deciduous*" (*italics* are those of the present author), a statement not conforming to his "sepals after flowering erect, connivent, long persistent on the fruit", used as key characters on p. 483 for separating the section *Cinnamomeae*, in which he places *R. suffulta*. Fernald in the new Gray's Manual keys out *R. conjuncta* (p. 870) under "sepals widely divergent or reflexed in maturity", whereas *R. arkansana* [var. *suffulta*] is keyed under "sepals porrect in fruit, forming a loose beak at summit of the receptacle", but both are placed under a larger heading (p. 809) of "sepals erect to divergent after flowering, persistent in fruit"!

After a study of a large series of specimens of *R. arkansana* var. *suffulta* and *R. conjuncta* in the herbaria of the New York Botanical Garden, Missouri Botanical Garden, and Chicago Natural History Museum, I have reached the inescapable conclusion that these two taxa must be treated conspecifically, and placed with *R. arkansana* as *R. arkansana* var. *suffulta*. Examination of this material, as well as studies made in the field,

leads me to conclude that it is impossible to employ the character of the sepals after anthesis, or any other character, moreover, as criteria for distinguishing *R. conjuncta* from *R. arkansana* var. *suffulta*. In this connection herbarium material is misleading, as pressure on the fruiting hypanthium may distort the original position of the sepals so that it is not possible to ascertain whether they were actually spreading, reflexed, ascending, or erect. The attempt to separate *R. conjuncta* from *R. arkansana* var. *suffulta* on the basis of the position of the sepal in fruit has led to considerable confusion.

Rydberg described *R. conjuncta* on the basis of a fruiting specimen in which the sepals are shown (*in the pressed state*) as mostly reflexed. But in various specimens of *R. arkansana* var. *suffulta* annotated by Rydberg and Erlanson as *R. suffulta*, the sepals are erect, ascending, spreading, and, under certain conditions of pressing, even reflexed. In a collection of *R. suffulta* by Mackenzie from Little Blue Tank, Jackson Co., Missouri on July 29, 1900, the sepals on some of the fruits are spreading to ascending, but on other fruits they are deciduous. In *Moyer 570* from Big Stone, South Dakota, identified by Erlanson as *R. suffulta*, an even later fruiting stage is shown in which most of the sepals have fallen, while the other remaining sepals are reflexed, spreading, or ascending, and in the case of those sepals remaining attached by their lower portion to the hypanthium, it is impossible to decide whether the sepal is erect or spreading. In another specimen, *Bush 12353* from Mound City, Missouri, identified as *R. conjuncta*, the very mature fruit has completely lost its sepals. It would be difficult, indeed, to reconcile this type of specimen with Rydberg's description of the sepals in *R. conjuncta* as "persistent" or with the new Gray's Manual "sepals erect to divergent after flowering, persistent in fruit."

In this connection, it should be pointed out that the key character "sepals widely spreading or reflexed in maturity" on p. 870 to include *R. conjuncta* is indented under the heading on p. 869 "sepals erect to divergent after flowering." In several specimens, such as *Bush 9371* from Courtney, Missouri, identified by Rydberg as *R. suffulta*, and *Mackenzie 5* from Waldo Park, Missouri, identified by Mackenzie as *R. suffulta*, the sepals

are *not erect* after anthesis, but, if one judges by the pressed specimen, are definitely *reflexed*.

Since sepal position after anthesis is influenced in an herbarium specimen by the pressure applied from a given direction, often unequally exerted on one side, and, as the sepals become more and more deciduous with age, it seems surprising that such importance to the position of the sepals on the fruit should have been held by both Rydberg and Fernald to be reliable criteria as applied to *R. conjuncta* versus *R. arkansana* var. *suffulta*. Furthermore, the character of the glaucous upper surface of the leaflets in *R. conjuncta* breaks down, as the foliage of *R. arkansana* var. *suffulta* also exhibits this, although not invariably.

In short, *R. conjuncta* Rydb. can in no way be separated from *R. arkansana* var. *suffulta*.

ROSA PALMERI Rydb.

In his key Rydberg (loc. cit. p. 485) characterizes this putative taxon as having "leaflets firm, dark-green above, paler and pubescent beneath, at least on the veins; leaf-rachis glandular-hispid." However, neither these characters nor the number of leaflets "leaflets on the young shoots mostly 9 and the floral branches mostly 5" [p. 502] serve to distinguish *R. Palmeri* from *R. carolina* and var. *villosa*. The type of *R. Palmeri* (*E. J. Palmer 3428* from Carthage, Jasper Co., Missouri), deposited in the Gray Herbarium, and other material segregated by Rydberg as *R. Palmeri* in the herbarium of the New York Botanical Garden, possess leaflets that are pale and more or less pubescent beneath as in *R. carolina* var. *villosa*, but *Palmer 18322* from Webb City, Jasper Co., Missouri, has the lower surface of the leaflets only sparsely pilose and tends towards *R. carolina* f. *glandulosa* (Crépin) Fern.

ROSA PETIOLATA Rydb.

As he erred in believing that a "decidedly pear-shaped hypanthium" set *R. Bushii* apart from species having a "globose or slightly pear-shaped" hypanthium (loc. cit. p. 485), Rydberg was misled trying to distinguish *R. petiolata*, based entirely on a fruiting specimen, with "hypanthium decidedly pyriform, or ellipsoid, long tapering at the base" (loc. cit. p. 485) from species having the hypanthium "globose or short-ellipsoid, rounded or barely acute at the base" (loc. cit. p. 484).

An attempt to analyze this species and to resolve its taxonomic status leads me, after careful comparison of the type specimen (*Bush*, Aug. 27, 1892, from Clark Co., Missouri in the herbarium of the Missouri Botanical Garden) with the herbarium material of the Chicago Natural History Museum, New York Botanical Garden, and Missouri Botanical Garden, to conclude that it is conspecific with *R. virginiana*. The height of 1–2 meters given by Rydberg for *R. petiolata* (loc. cit. p. 501), as well as the character of “small straight prickles,” can be duplicated in *R. virginiana*. Ordinarily, the prickles in *R. virginiana* are conspicuous, but the species is variable with respect to the degree of prickliness, specimens occasionally occurring that are quite prickleless or with few reduced prickles.

So far as the pyriform or ellipsoid hypanthium is concerned, this appears to be the result either of varying degrees of maturity of the fruiting receptacle or of the manner of pressure exerted within the press, rather than to be indicative of any natural condition. For example, in a collection by *John K. Small* (3 mi. north of Harrisburg, Pennsylvania, July 30, 1888), deposited in the herbarium of the Chicago Natural History Museum and identified by Dr. Erlanson as *R. carolina*, two of the fruiting receptacles are pressed in such a way as to appear acutish and subturbinate, while others have a characteristic depressed-globose shape. A collection by *Bush* (no. 10122) from Dumas, Clark Co., Missouri, which may be referred to *R. virginiana*, and in a somewhat earlier stage of fructification than the type specimen of *R. petiolata*, has fruiting receptacles varying from subglobose and rounded at the base to subpyriform and narrowed at the base. I have also referred to *R. virginiana* the specimen of *Steyermark 26417* from Chariton Co., Missouri, which has pyriform fruits narrowed at the base.

However, the subpyriform-shaped receptacles appear to owe their form to the pressure on that particular part of the press. It is probable that the type of *R. petiolata* from Clark Co. originated from Dumas, as that locality was the principal one visited by *Bush* in Clark Co. in the early days of his collecting. It is significant that other collections made by *Bush* from Dumas have proven to belong to *R. virginiana*, such as his 5866 (type of *R. Aucuparia*) and 10117, 10122, and 10173 (all of which he himself

identified as *R. virginiana*). Rydberg identified a Deam collection (no. 39512) from Porter Co., Indiana, as *R. petiolata* because of the pyriform fruit, whereas Deam identified this collection as *R. carolina*. Although Rydberg describes the hypanthium of *R. conjuncta* (loc. cit. p. 505) as "subglobose, acute at the base," the type specimen (*Bush* 101 in the herbarium of the New York Botanical Garden) shows most of the hypanthia as subpyriform! As any rose-gardener or student of roses knows, a number of species possess pyriform and elongated fruiting receptacles, but in the case of the species under discussion, i. e. *R. petiolata* and other species segregated by Rydberg on the basis of pyriform fruits (*R. Bushii*), the pyriform shape appears to be due to either degrees of maturity of the receptacle or pressure exerted on the specimen in press.

ROSA POLYANTHEMA Lunell.

Lunell (Am. Midl. Nat. **3**: 138. 1913) describes the leaflets of the type specimen (collected on the banks of the Missouri, not far from Bismarck, Burleigh County, South Dakota) as "glaucous and more or less tomentulose and even glandular beneath, especially on the main nerve." Rydberg, however, in his specific description (loc. cit. p. 505) states the leaflets to be "short-pubescent beneath", but in his key (loc. cit. p. 485) modifies the statement, placing *R. polyanthema* under the part of the key with "leaves densely pubescent, especially beneath."

An examination of isotype material of *R. polyanthema* in the herbaria of the New York Botanical Garden and Chicago Natural History Museum reveals that the leaflets are mainly pubescent on the midrib beneath and glabrate to very sparsely pubescent on the main surface, and can not be considered as "densely pubescent beneath." This type of pubescence can be matched in other material from Missouri, Kansas, and South Dakota referred to *R. polyanthema*, as well as *R. arkansana* var. *suffulta* specimens showing variation in pubescence on the lower leaf surface from a more or less moderately pubescent surface to one only sparsely pubescent. Dr. Erlanson identified the specimens of *Milligan* from Lancaster Co., Nebraska, *Aiton* from near Minneapolis, Minnesota, and *Sandberg*, Hennepin Co., Minnesota, as *R. suffulta* [= *R. arkansana* var. *suffulta*], but each of them matches well the isotype material of *R. polyanthema*. In

both these taxa the leaflets vary from 9–11, and are glaucous beneath. In my opinion *R. polyanthema* can be considered a vigorous type of *R. arkansana* var. *suffulta* with large, broad leaflets.

ROSA RELICTA Erlanson.

Deam treats this taxon (Fl. Indiana, p. 577) as a variety of *R. suffulta*, while Jones (Fl. Illinois, 2nd ed., p. 164) makes it a synonym of *R. suffulta*. In her original description (RHODORA 30: 116–117. 1928) Erlanson states that "*Rosa relictata* begins to flower earlier than *R. suffulta*," but several specimens from Missouri which I would identify as *R. arkansana* var. *suffulta* (*Steyermark* 5708, 5711) were collected in flower on June 2, and had already been in anthesis for several days previously. This is as early, then, as the May 29th date of *Bush* 11336 and 11337, the Wellington, Missouri collections cited as *R. relictata* by Erlanson in her original description.

Other collections from Wellington by Bush (11327 and 11334) made on the same day (May 29) and probably from the same locality ("dry banks, Wellington") as the specimens cited by Erlanson, match material of *R. arkansana* var. *suffulta*, as do additional collections Bush made at Wellington (his numbers 11754, 11771, and 11768). In both taxa the infrastipular prickles are not differentiated from prickles of the internodes, the leaflets are more or less appressed-pubescent beneath with varying degrees of pubescence, and the hypanthia are glabrous. The aerial branches of the stems of *R. relictata* are described by Erlanson as being "5–30 cm. high," but Bush's Wellington specimens, which I would refer to *R. arkansana* var. *suffulta*, collected on May 29 (number 11327 and 11334) on the same day as his other Wellington collections (numbers 11336 and 11337), cited by Erlanson under *R. relictata*, have stems which are 50 cm. or more high and are certainly not "weak" or "semi-herbaceous" as stated (loc. cit. p. 117) by Erlanson.

So far as the stipules in *R. relictata* being narrower than those of *R. suffulta*, there is no justification for stating that such a difference exists. So far as *R. relictata* having a "small fruit with reflexed and semi-deciduous sepals" is concerned, it would not seem possible, after studying material examined by Erlanson, to judge the validity of this character from herbarium material. Indeed,

in anthesis, it is impossible to state whether the sepals are erect and persistent or reflexed and semi-deciduous.

In short, the characters by which Erlanson distinguishes *R. relictata* cannot be used reliably to separate this putative taxon from *R. arkansana* var. *suffulta*, and the study of available herbarium material points to the two being conspecific.

ROSA SUBSERRULATA Rydb. I have examined the type (*Bush 42*, from Swan, Missouri) deposited in the herbarium of the New York Botanical Garden. The stipitate-glandular rachis of the leaf and more or less glandular-toothed leaflets, which are mostly glabrous beneath, differ in no fundamental respects from other collections satisfactorily identified and placed with *R. carolina* f. *glandulosa* (Crépin) Fern.

ROSA RUDIUSCULA Greene. This species was based upon a Bush collection (no. 208) from Little Blue, Jackson Co., Missouri. As Deam states in his *Flora of Indiana* (p. 578), "This rose is intermediate between *R. carolina* and *R. suffulta*, and has been produced experimentally by Dr. Erlanson by crossing these species. Because of its hybrid nature it is difficult to identify unless one is familiar with our wild roses. In former accounts of the genus the tendency of *Rosa rudiuscula* to have thick, leathery leaves has been stressed. This character is also found in *Rosa carolina* and is not invariably present in the hybrid."

I am in agreement with Deam's remarks that the character of thick, leathery leaves is not invariably present in *R. rudiuscula*. In fact, there are many transitions from a submembranaceous to subcoriaceous texture in both *R. carolina* and *R. suffulta* [= *R. arkansana* var. *suffulta*] as well as in what is passing as *R. rudiuscula*. Since some of the specimens identified as *R. rudiuscula* show both glabrous as well as bristly receptacles, it is possible to place them either with *R. carolina* and var. *villosa* or with *R. arkansana* var. *suffulta*. Greene describes the calyx (Leaflets 2: 134. 1911) as "more or less obviously beset with short stout strongly gland-tipped bristles, but otherwise glabrous." The fruit is described as "depressed-globose, the sepals persistent and closely reflexed over it." The persistent character is that of *R. suffulta* [= *R. arkansana* var. *suffulta*], while the reflexed nature of the sepals is more characteristic of *R. carolina*. However, many fruiting specimens of *R. carolina* exhibit various

stages of sepal persistence, and a tardily deciduous sepal is difficult to distinguish from a persistent one.

Even granting that *R. rudiuscula* is intermediate between *R. carolina* and *R. arkansana* var. *suffulta* and has been produced experimentally to indicate its hybrid origin, the fact that plants identified as *R. rudiuscula* run the gamut of variation from submembranaceous to firmly subcoriaceous leaflets and from a glandular-hispid to glabrous receptacle leads me to conclude that such a taxon cannot be recognized as a clear-cut one, and, therefore, becomes a permanent source of confusion. According to Art. 75 of the latest edition (1952) of the International Code of Botanical Nomenclature, "A name of a taxon must be rejected if it is used with different meanings, and so becomes a long-persistent source of error." Even by creating a new nomenclatorial status for it in the category of a hybrid indicated by a \times would not clarify the confusion. I believe taxonomy is best served if when specimens are recognized as intermediate between *R. carolina* and *R. arkansana* var. *suffulta* it is so stated or indicated on an herbarium label. Such statements as "tending towards *R. carolina*" or "tending towards *R. arkansana* var. *suffulta*" are appropriate. In this manner, it can be recorded that there are various intermediate stages exhibited by a number of specimens, ranging from firmly coriaceous to membranaceous leaflets and from hispid-glandular to glabrous receptacles, without committing oneself to a given name, especially when that name cannot be applied to any one of the intermediates.

In various recognizable oak hybrids and in various named hybrids belonging to other genera, the differences between the hybrid and its parent species are sufficiently marked and perceptible to be distinguished in field and herbarium. In the case of *R. rudiuscula*, however, there are no definite characters which hold true to distinguish specimens as either *R. carolina* on the one side or *R. arkansana* var. *suffulta* on the other or definitely as a hybrid between them. I, therefore, propose that in the interests of clear taxonomy the name *R. rudiuscula* be abandoned and rejected as one leading to confusion and error.—CHICAGO NATURAL HISTORY MUSEUM.