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Salix petiolaris, as of Fernald: a tragedy of errors. Refused by Jour. Arn. Arb. (see correspondence.)

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178-187. 1948.

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1 (As submitted to, and rejected by, Govern. Arnold Arboretum)

SALIX PETIOLARIS, AS OF FERNALD: A TRAGEDY OF ERRORS.

Carleton R. Ball

At the very end of his review of "Difficulties in North American Salix", Dr. M. L. Fernald (8:46-48) * discusses Salix petiolaris and makes some amazing statements.

* Numbers in parentheses refer to "Literature Cited", at end of paper.

On page 47, he says: "It seems extraordinary that the identity of our low shrub, Salix gracilis, should, for more than a century and a quarter, have been confused by all students of Salix with the British tree, S. petiolaris J. E. Smith, Trans. Linn. Soc. vi. 122 (1802), Engl. Bot. xvi. t. 1147 (1803), and Fl. Britt. iii. 1048 (1804), etc." On p. 48, he concludes: "The latter name [S. petiolaris] seems to have been wholly misapplied to our material."

It would have been extraordinary if it had been true. In these statements, however, Fernald merely jumps to a conclusion. Therein he tells all American botanists beginning with Pursh (17) in 1814, and all British botanists later than Hooker (12) in 1820, Forbes (10) in 1829, and Loudon (15) in 1838, that they did not know what they were talking about when they denied that Salix petiolaris ever was a native British willow. He offers no definite evidence but merely a dogmatic conclusion. His most important errors of fact and assumption are discussed below. At the outset, let it be stated emphatically that S. petiolaris J.E. Smith was wholly an American ^{plant} when published in England in 1802, and still is after 145 years. Now for the evidence

Error 1. The Assertion that *S. petiolaris* is "British".

Salix petiolaris was described by Sir. James Edward Smith (20:122-123) in 1802.

The description and notes follow:

"11. *Salix petiolaris*. Dark long-leaved willow.

"*S. feliis lanceolatis serratis glabris subtus glaucis, germinibus pedicellatis ovatis sericeis, stigmatibus sessilibus bilobis.*

"In *salicetis et palustribus*. D. Dickson. Fl. April.

"This species has not been found wild in Norfolk, but was sent to Mr. Crowe by Mr. Dickson, along with the last [*S. laurina*], as of British growth. It has most affinity with the two preceding species [*S. laurina* and *S. nigricans*] but has longer and more slender twigs. The leaves are ~~now~~ 4 or 5 inches long, about an inch broad, lanceolate, pointed, serrated, somewhat revolute, generally a little unequal at the base; bright green, smooth and shining above; glaucous beneath, and sometimes a little (p. 123) hairy. In drying they turn of a purplish black. The footstalks are peculiarly long, linear, and slender, silky on the upper side. Stipules small, crescent-shaped, toothed, smooth. The female catkins, the only sex I have seen, are scarcely an inch long, with black, hairy, often obovate, often notched, scales. Germens on long footstalks, small, ovate, silky. Stigmas perfectly sessile, ovate, obtuse, divided into two lobes."

^{Smith} it was described again, and illustrated by a colored plate (21: species and plate 1147) in 1803. The description is similar to the original except that the branches now are included, as "slender, flexible, round, smooth, more or less purplish or brown" and the stipules are said to be lunate. As to its source, Smith says: "For this new species of *Salix* we are obliged to Mr. Dickson, who found it in some part of Great Britain, the exact place is not remembered, and sent it in a growing state to Mr. Crowe. We know only the female, which is a small spreading tree,". It was ^{described} published again

^{Smith} (22:1048-49) in 1804, this time in Latin, but with no other change in the description. In his final publication (23:181-182), Smith, in 1828, says: "In easier grounds and swamps. Sent from Scotland by the late Mr. Dickson. In Fossil marsh, on the north side of the canal, Mr. David Don. ~~M~~ ^H ~~marshes~~ in Anguashire, Mr. George Don. Hooker." Apparently, only the last two sentences are to be credited to Hooker, and probably to his *Flora Scotica*. At the end of his discussion of the species, Smith states:

"Mr. Fusch has suspected it to be not truly British, but there seems no reason why, like several other willows, it does not grow wild in Europe as well as in North America, and

the authorities above mentioned are not likely to be erroneous. Nobody, who has seen the living plant, can confound it with any other, either British or exotic."

Hooker (12:419), in 1820, says: "Scotland, Mr. Dickson. Angus-shire, Mr. G. Don. . . . "I have never seen native specimens". " He repeats this in essentially the same words in editions 2, 4, and 5, 1831, 1838, and 1843. In Ed. 6, p. 386. 1850, he says "Scotland, Dickson. Angusshire and Possil Marsh, near Glasgow, G. Don. Not uncommon in North America and certainly not a European species, although perhaps as wild in this country as most of our other tree willows."

Forbes (10:45), in 1829, uses the description of Smith and then says: " , , . said to be a native of Scotland." Loudon (15:1533-1534), in 1838, discusses the species and the opinions of various authors, and quotes from them as follows: "Smith observes that he 'knows nothing of the male plant'. (Engl. Fl.) "Mr. Borrer had formerly both sexes growing ~~in~~ at Henfield, having received the male from Mr. G. Anderson, but at present he has the female only'. (W.B.) "A native of Scotland, in Angus-shire and other places. Smith in Engl. Bot.)". "Sent from Scotland by the late Mr. Dickson. In Possil Marsh, on the north side of the canal; Mr. David Don. Marshes in Angus-shire; Mr. George Don. (Hooker)". Finally, he quotes Smith's statement of 1828, beginning "Mr. Pursh has suspected . . .", and ends with Hooker's long repeated statement: "I have never seen native specimens".

S. petiolaris has never been included in British floras since these early authors. When revising and monographing the British willows, White (25) ~~in~~ ^{and} in 1890 ~~with~~ Linto (14) ~~in~~ in 1913 did not think it necessary ~~to~~ to mention it even as an excluded species.

In America, Pursh (17:616), in 1814, follows Smith's description but says: "It has been by mistake adopted as a native of Great Britain." He described also S. fuscata Pursh (p.612) from New York and Pennsylvania, which generally has been considered a synonym of S. petiolaris but which, by its obovate-lanceolate leaves, obtuse scales, short-pedicelled capsules, and black-tomentose 1-year twigs, may well be S. humilis Marshall, or possible S. discolor var. latifolia Andersson.

Hooker (13:148), in 1839, includes S. petiolaris, with leaves serrate, from "Lake Winnipeg. Dr. Richardson." Also "S. rosmarinifolia L.", with leaves narrow and mostly entire, from "Saskatchewan. Dr. Richardson." This latter is not Linne's species but the later-described S. gracilis Andersson. Barratt (7:4), in 1840, says: "This is undoubtedly a native Willow, since both sexes are found here plentifully. The staminate plant was unknown in Great Britain till transmitted by me, in the living state."

Torrey (24:207), in 1843, says: "This species was many years ago adopted by mistake as a native of Scotland, and has ever since obtained a place in British Floras, but there can be little doubt that the plant described by Sir J.E. Smith was of North American origin, as Pursh and Lindley have both asserted." All later publication, from Gray's Manual (11:426) in 1848 onward, have recognized S. petiolaris as an American species, (until Fernald denied it in 1946.)

7
1 Fernald (8:48) asserts: "Although Schneider talked all around the subject, . . . there is no indication in his discussion that he actually compared our species with the true S. petiolaris." As "our species" is true S. petiolaris, this criticism falls. But Schneider (19:16-19, not "16-24" as Fernald says) reviewed much of the literature reviewed herein, and more besides, and quoted the opinions of numerous English and American botanists. He then properly observes: ~~19:22~~: "How this plant came to England has never been exactly explained. It is not mentioned in later books on the English flora."

That S. petiolaris, and many other American plants, did reach Great Britain in early days is not surprising. ~~BARBER~~ Their private botanic gardens were constantly obtaining foreign material and their tradesmen were on the lookout for material for their hand industries, of which basketry was an important member. Smith himself said (20: 112) that "Mr. Crowe, . . . for many years . . . has . . . collected willows, both indigenous and exotic, from all quarters . . .".

8 ft type

Point

Figure 2. Assertion that *S. petiolaris* is a "tree"; *S. gracilis* a low shrub. Fernald says (8:47) "the British tree, *S. petiolaris* J.E. Smith", as contrasted to "our low shrub, *S. gracilis*". Smith's original description (20:122) does not give the height but in 1803 he says (21) "We only know the female, which is a small, spreading tree." Forbes (10:45), in 1829, called it a "A bushy tree, with slender, spreading, purplish or dark-brown branches." ~~London (18:133)~~

Let us consider the facts.

All of the British descriptions were drawn from cultivated plants in botanical gardens. In such gardens, in Britain, the soil was enriched and the plants usually well spaced, with little competition. These conditions stimulate growth to unusually large size. All of the British plants had been started from cuttings, which insures a single stem or trunk and therefore a tree-like habit of growth. It insures also that all of the nutrients absorbed through the root system go to develop a single ^{stem} ~~plant~~ and not a clump of ^{stems, the} ~~plants~~, thus permitting increased height. Finally, all of the British plants were female and, ~~the~~ being unfertilized, wasted no nutrient energy in ripening the usually copious annual crop of seeds. No data on actual height are given by British authors.

American descriptions^s on the other hand, were based on wild plants growing in natural conditions of soil, exposure, and competition. Most of the earlier observations also were made in the extreme southern portions of the range of *S. petiolaris*, where climatic conditions are least favorable to its development. In 1814, Pursh (17:616) follows Smith's description. In 1840, Barratt (7:4) does not record the height. In 1843, Torrey (24:207) says: "stems 4-10 ft. high". In 1865, Wood (26:653) ^{says} ~~described~~ ~~it as a tree~~ "Shrub or small tree 4-15 f. high", but does not give the source of his information.

Its best growth is made in a wide strip across southern and central Canada. Recorded heights of plants in Saskatchewan run from 4, 6, 7, and 8 feet to 9, 10, and 12 feet. Plants collected by the writer at Clyde, ^(Lat. 54°) north of Edmonton, in Alberta, were 10-12 feet in height (No. 2358). These were tree-like in habit and some had but a

Salix petiolaris shows its lowest average height in the southern portion of its range, from New England to Nebraska. Northward its height steadily increases. In central Saskatchewan and central Alberta, heights of 8, 10, and 12 feet are ~~recorded~~ recorded commonly. The writer found plants 10-12 ft. high (No. 2838) at Clyde, north of Edmonton. Even in extreme northern Alberta (Lat. $59^{\circ} 30'$), Raup 2125 was from a "Shrub about 10 ft. high." At the request of the writer, Dr. George H. Turner is measuring heights and studying habit in the Edmonton area. Already, he has found many plants 12-14 ft. high, some 15 ft., and one ^{each} 17.5 ft. high, 19.5 and 22 ft. in height.

Several of the writer's plants in the Clyde area were few-stemmed and tree-like in habit, with more or less spreading branches. Dr. Turner already has found several single-stemmed plants in open aspen woods. Some are young and only 4 to 8 ft. high. Others are 11 feet high. All are tree-like in habit, with somewhat spreading branches. He also finds few-stemmed plants 12-14 feet high and tree-like.

These taller plants are not "low" shrubs and where they have but one or few stems they are "small trees". Fernald himself says (:46) that "S. gracilis is a slender shrub . . . 1-3 m. high;" Now, ~~10~~ 3 m. is 10 feet, which is not exactly low for a shrub. The contention for a specific difference in height and habit is shown to be unproved.

Fernald further says (8:46): "Typical Salix gracilis is smaller and generally more northern" (than his var. textoris, which is true S. petiolaris). The 12-19.5-ft ²² northern plants therefore should be smaller than those farther south. Exactly the opposite is shown to be true.

Even at lat. 59° 30', in extreme northern Alberta, Raup 2125 was a "Shrub about 10 ft. high".

~~single trunk. These taller plants are not "low" shrubs, and where they have but one or two stems they are "small trees". Fernald himself says (8:46) that "S. gracilis is a slender shrub . . . 1-3 m. high;". Now, 3 m. high is 10 feet, which is not exactly "low" for a shrub. The contention for a specific difference in size and habit is shown to be unproved.~~

Fernald further says (8:46): "Typical Salix gracilis is smaller and generally more northern" (than his var. textoris, which is the true S. petiolaris). These 10-12-foot northern plants therefore should be ~~be~~ smaller than those farther south. ~~Exactly the reverse is shown to be true.~~

by type ~~Point~~
Error 3. Assertion of Spreading branches on 'British'; erect on American Plant.

Fernald asserts (8:47) that S. gracilis of America "is a slender shrub with erect, green to olive-^{brown}~~green~~ tenuous and flexible branches." He further asserts, quoting Forbes (10:45) with bracketed comments of his own, that the alleged "British" S. petiolaris is "A bushy tree, with slender, spreading [not strongly ascending] purplish or dark-brown [not green or olivaceous] branches." The explanation of the tree-like habit of the British-grown plants of S. petiolaris has been given under ~~Error~~ *Point* 2, above. They were single-stemmed plants because grown from cuttings, and they were "bushy" because growing widely spaced in botanic gardens.

Where there is little or no competition with other plants, or among ^{a few} ~~many~~ stems of a single plant, the branches tend to grow outward. Where there is severe lateral competition from adjacent plants, or among crowded stems of one plant, they necessarily must grow upward. The low, clumpy, many-stemmed plants of S. petiolaris in the northern United States and northward have erect or ascending stem and branches. The fairly common tall plants of central and western Canada, ~~and adjacent Minnesota and North Dak-~~ ^{ota}, with only 1, 2, or 3 stems, have more or less spreading branches because the plants are well spaced. Both types of branching, and all degrees of intermediacy, may be ~~may be seen in~~ in some Canadian localities. These differences are environmental and ^{genetic} ~~genetic~~ effects.

6. f type

Point

Error 4. Assertion that S. petiolaris has purplish; S. gracilis greenish twigs.

As noted above, under Error 3, Fernald states (8:47) that S. gracilis has "green to olive-brown" branches, whereas "British" S. petiolaris has "purplish or dark-brown branches." The only answer is that both so-called species have twigs with both ranges of color.

Some 275 sheets of S. petiolaris in the herbarium of the writer, collected from New England westward to Nebraska and Colorado and northward far into Canada, have ~~just~~ been examined. Practically all of them show something of the two color ranges and the dominant effect is ^{brown to} dark brown rather than green to light brown. In general, the 3- and 2-year twigs are brown to blackish, especially in summer and autumn. 1-year and seasonal twigs often are green or olive-green ^{to yellow}, especially early in the season. These differences are noted on the same plant. In general, there is a progressive deepening of the color on all twigs as the season progresses. All of these facts were especially evident where collections had been made from the same plant at intervals during a season. This has been done by A. J. Breitung, the late A. H. Brinkman, and W.C. McCalla in Canada and by F.W. Rapp in Michigan. The average twig color tends to be lighter in the drier Great Plains Area than in the more humid eastern areas.

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Bebb No. 24, grown by him from cuttings received from Kew Gardens, England, also shows twigs ranging from greenish to dark brown. These facts make it evident that there is no specific difference in twig color between S. petiolaris and S. gracilis, whatever their relationship. Specimens from Nebraska and Colorado, and ^{many} ~~some~~ from Alberta show distinctly reddish twigs, which McCalla says are beautifully crimson in spring.

Point

Error 5. Assertion that only the "British" plant has Leaves 4-5 inches Long.

f type

The original description of S. petiolaris (20:122) says: "The leaves are 4 or 5 inches long, ~~and~~ about an inch broad." In the next year, Smith said (21:No. 1147) "Leave 4 or 5 inches long and almost an inch broad, when full grown." This second description is ~~accompanied by~~ ^{with} plate 1147, containing a twig with two pistillate aments and leaves 4-6 cm. long and up to 1 cm. wide. The plate also carries what obviously is a short section of a vigorous autumnal shoot or root sprout, bearing two leaves 4-4.5 inches long and 0.8 inch wide, with long petioles.

Here, then, we have the origin of "leaves 4 or 5 inches long and almost an inch broad". As pointed out by the writer (4, 5), such shoots normally have leaves 1.5 to 2 or even 3 times as large as these ~~leaves~~ on twigs which have borne fruits. Because taxonomic descriptions seldom cover such vigorous shoots, and because their deviation from the taxonomic norm has not been generally known, the meaning of this portion of Smith's description and plate has not been generally recognized.

Fernald puts emphasis on the small leaves of the American plants as compared with these large leaves of the alleged "British" plant. Do our American plants, whether recognized as S. petiolaris or as S. gracilis, ever produce shoots with such large leaves? They certainly do! In the writer's herbarium, a specimen from Quebec has leaves up to 4.8 by 0.6 inches; a New York specimen up to 4.5-5 by 0.75 inches, with petioles 0.75 inch long; two Michigan specimens have leaves up to 4 by 0.75, and 3.5 by 0.85 inches, respectively, and two Iowa specimens bear leaves to 3.5 by 1, and 4 by 1.1 inches, respectively. Thus in 2 cases the leaves are 4 to 5 inches long and in 2 cases up to 4 inches. In 4 cases they are 0.75 to 1 inch wide, and in one case still wider. In late August, 1947, Dr. Turner collected sprouts from plants near Fort

But Smith, in 1803, threw further light on his description and plate. He writes (21:No. 1147) "The very young leaves are tinged with an elegant ferrugineous hue, especially in the radical shoots which spring up when a tree is cut down. Such shoots in some species differ greatly from the general appearance of the plant, and require in this genus to be particularly attended to." Here is an early recognition of the plant variation which the writer (4, 5) has been emphasizing. But, more important still, Smith could not have known about the coloring of leaves on "radical shoots" of his S. petiolaris unless he actually had seen the growth from a cut tree. The only plants known to him were those in the Crowe Garden, on which his description was based. This fact tells us almost certainly that the vigorous shoot in plate 1147, of 1803, with leaves 4 or 5 inches long, was a root sprout, from which such leaf development would be normal.

Saskatchewan. Five had blades to 5 inches long, one to 5.5 inches, and one (3 sprouts) had blades to 6 inches long. Later collections probably would show longer blades. in length.

Part
Error 6. Assertion of Different Scale Color in "British" and American Plants.

Smith's original description (20:123) says: "black, hairy, often obovate, often notched, scales." A year later, he wrote (21:1147) "Scales small, obtuse, often notched, black and hairy." Forbes, who described also only the plants growing in a botanic garden, wrote (10:45) "Scales rounded, notched/." Fernald (8:47) says that the scales in American S. gracilis are "elongate, entire, and yellowish". What are the facts?

Flower scales, in any willow, are nearly as varying as the leaves, already discussed by the writer (4,5,6). As the ament emerges from the bud, the scales in all species are relatively short and broad, and usually obtuse, no matter what final shape is normal for the species. As the ament develops, the scales change in size, shape, and color. Linton (14:1-2) made some observations on such changes. These changes progress faster and farther in the basal portion of the ament than in the apical, in lax aments than in dense ones, and in fertilized aments than in unfertilized. Unfertilized pistillate aments usually do not become as long or as lax as ~~normal~~ normal. The various floral organs also do not develop as far as when fertilized. The scales, and the capsules with their pedicels, styles, and stigmas, usually remain shorter and therefore relatively broader than is normal.

The male plant of S. petiolaris was not known in Great Britain until sent by ~~James~~ ~~Barrett~~ Barrett (7:4) and probably others some 25 years or more after the species was described in 1802. The original and later descriptions, therefore, were based on unfertilized pistillate aments, with consequent error in the knowledge of the actual and relative size and shape of floral organs. This accounts for some of the differences recorded. In Bebb No. 24, grown in Illinois from cuttings sent from Kew Gardens, London, the not fully developed scales are broad and blackish at tip.

A study of numerous American specimens ~~of American specimens~~ of S. petiolaris (and S. gracilis) shows that the scales vary from obovate, as the aments open, to oblanceolate at maturity. The apex varies from truncate to slightly erose (notched), or rarely roundish. The color varies from light brown to brown or dark brown, as the scale ages, and is darkest at the tip. If quickly or poorly dried, they are blackish. They blacken more readily while very young and in the "obovate" stage. Specimens were noted

in which the young scales, poorly dried, were "obovate and blackish". They never are "yellowish", as described by Fernald, in the sense that those of S. lucida, S. amygdaloides, S. caroliniana (S. longipes var. Wardii), S. nigra, and S. interior are yellow or yellowish.

28 type
Error 7. Listing of Varieties of S. petiolaris Synonymous with S. gracilis.

More problems arise when we consider the relationship of S. gracilis Andersson to the American S. petiolaris Smith. Fernald, who refuses to recognize an American S. petiolaris, has described, in 1946, his S. gracilis var. textoris var. nov. (8:46).

add to #8
It represents the larger plant here discussed as the true S. petiolaris. He describes it as having "capsulis ad 9 mm. longis; foliis maturis glabratiss 4-10 cm. longis ad 2 cm. latis evidenter serrato-dentatis". He then states (8:47) that S. gracilis Andersson is ~~with~~ "characterized by capsules only 5-7 mm. long, and leaves entire or only obscurely denticulate, the mature ones only 2.5-7 cm. long and 3-11 mm. ~~with~~ broad."

a
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It is not the purpose here to decide whether a variety of S. petiolaris with allegedly lower stature, smaller subentire leaves, and smaller capsules shall be recognized. The by Andersson, present object is to point out the errors made by Schneider, and by Fernald in discussing and creating certain names and combinations.

Andersson, in his compilation of the willows of North America (1), described S. petiolaris Smith on page 126 and compared it ~~with~~ only with S. sericea Marsh., which he erroneously called "S. grisea Marsh." On page 127, five species later, he described his new species, S. gracilis, citing the "S. rosmarinifolia L." of Hooker (13:148) as a synonym. He expresses much doubt as to the actual relationships of his S. gracilis but did not compare it with S. petiolaris, in spite of calling Hooker's plant a synonym. S. gracilis has been regarded by most later authors ~~as~~ either as a synonym of S. petiolaris or as a variety of it, with smaller, narrower, mostly entire leaves.

To his new species, S. gracilis, Andersson attached a new variety, rosmarinoides, Andersson. The only significant character assigned to it, in the very brief and jumbled Latin description, is "foliis apicem versus serrulatis", whereas of his S. gracilis he says "foliis . . . integerrimis". In other words, his var. rosmarinoides was the true S. petiolaris, which he does not even mention in discussing the relationships of his S. gracilis. Andersson seems to have realized his error presently, for var. rosmarinoides is never mentioned again, in his two monographs ^(2, 3) of 1867 and 1868. In 1867, Andersson (2:109) reduced S. gracilis to a subspecies of S. petiolaris. In 1868, he (3:235) reduced it to a variety of S. petiolaris, thus ending his doubts as to its relationship. All of this would be unimportant except for the later erroneous actions of of both Schneider and Fernald.

Schneider, in 1920, published (19:19) his "S. petiolaris var. rosmarinoides ~~comb. nov.~~", which he said was based on "S. petiolaris * rosmarinoides Andersson", of 1858. Here Schneider makes a first error. Andersson made no such combination in 1858, or in any other year. As noted above, his combination ~~was~~ in 1858 was "S. gracilis * rosmarinoides", a variety which he immediately abandoned, and never mentioned again. Schneider's second error was in assuming that the asterisk in Andersson's combination denoted a subspecies instead of a variety. It did not, as placed in that publication, and Gray correctly called it "var. rosmarinoides" in the simultaneous American edition (1, Am. ed., p. 67). Andersson's publications are full of the inconsistent use of numerals, Greek letters, and asterisks to denote varieties. If Andersson's variety really had been one of S. petiolaris, therefore, Schneider's combination would not have been "new", but a repetition. As Andersson made no such combination, Schneider's combination has no base.

Schneider cites S. gracilis Anders. of 1858, S. petiolaris subsp. gracilis Andersson of 1867, and S. ~~petiolaris~~ petiolaris var. gracilis Anders. of 1868 as synonyms of his (Schneider's) "var. rosmarinoides." Obviously they are not, because they represent the gracilis concept, whereas his "var. rosmarinoides" represents the petiolaris concept, as Andersson had recognized after 1858. In other words, Schneider was making S. petiolaris (S. gracilis var. rosmarinoides Anders.) a variety of itself.

Fernald (8:46-47), in 1946, says of S. gracilis, "It is S. petiolaris vars. rosmarinoides (Anders.) Schneid. and angustifolia Anders. . . .". Here he follows Schneider in the errors just discussed. But Fernald, refusing to recognize S. petiolaris as an American plant, had just described (8:46) his S. gracilis Anders. var. textoris var. nov. Actually, his var. textoris represents the American form with larger serrate leaves, which is the true S. petiolaris Smith. Fernald's variety, therefore is a synonym of S. petiolaris Smith. But because Andersson (1:126-127), after describing S. petiolaris, redescribed the same form as S. gracilis var. rosmarinoides Andersson (var. nov.), Fernald's ~~var. textoris~~ S. gracilis Anders. var. textoris var. nov. also is a synonym of Andersson's S. gracilis var. rosmarinoides.

Fernald was in error also in omitting S. petiolaris var. gracilis Andersson of 1868, from his above-named list of varieties of S. petiolaris which are synonyms of S. gracilis. Here he probably was misled by Schneider's erroneous reference.

- 14 - 11

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illus.,

1864?



3814 Jocelyn St., N.W.,
Washington 15, D.C.

March 22, 1947

Dr. Wm. N. Fenton,
Bureau of American Ethnology,
Smithsonian Institution,
Washington 25, D.C.

Dear Dr. Fenton:

Having noted the statement regarding manuscripts, sent with the last meeting notice, I submit a 14-page manuscript entitled "Salix petiolaris, as of Fernald: A tragedy of Errors".

This is the third in a recent series showing what happens when specialists make arbitrary decisions without adequate study (or any study at all) of the living plants involved. The first two were published in Journ. Arnold Arboretum (Merrill Memorial issue, by invitation), and Rhodora (of which Dr. Fernald, (criticised therein), is editor.

If accepted, and when published, I shall wish to purchase about 150 reprints.

Cordially yours,

Carleton R. Ball
U.S. Dept. Agriculture
(retired)

Washington Academy of Sciences

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BUREAU AMERICAN ETHNOLOGY
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EDWARD A. CHAPIN
U. S. NATIONAL MUSEUM

Smithsonian Institution
Washington 25, D.C.
May 5, 1947

Dr. Carleton R. Ball
3814 Jocelyn Street, N.W.
Washington 15, D.C.

Dear Dr. Ball:

In the time that has elapsed since receiving and accepting your paper: *SALIX PETIOLEARIS*? AS OF FERNALD, it has been read by several botanists to whom the editors referred it. Two of us who are editors feel that as the acknowledged authority on willows it is not necessary to overplay your hand: the truth is more important and certainly more enduring than your adversary. Therefore, I feel that the Conclusion is out of place, the reference to the score at Cambridge is hardly necessary (and Yale is my university), and the conversation between the putative non-botanist and his president is well enough known to have reached me before, and I don't think it helps your paper. The botanists make some other structures. One questioned two of your dates in the references. Another thinks that it ought to be contributed to a Botanical journal, but I will leave that to you and we will run it if that is your wish. It is also suggested that running it here will obligate us to Fernald's reply. A final reaction is that it is longer than necessary and should be condensed. I am returning the manuscript to you so that you may incorporate these suggestions and return it to us or place it elsewhere, as you will. I shall appreciate hearing from you.

Cordially yours,

Wm. H. Sinton
Senior Editor.

15.3
Dr. A. C. Smith,
Arnold Arboretum of Harvard University,
Jamaica Plain 30, Massachusetts.

3814 Jocelyn St., N.W.,
Washington 15, D.C.

May 14, 1947

Dear Dr. Smith: I am inclosing a manuscript entitled: "*Salix petiolaris*, as of Fernald: A Tragedy of Errors", with a view to the possibility of publishing in the Journal.

This is a critical discussion of Dr. Fernald's arbitrary rejection of *S. petiolaris* as an American species, after complete agreement on that point by all American and British botanists for more than 100 years. It will be a real tragedy if the new Manual appears with that misleading information for botanists.

This will be the fourth and last of my series of papers designed to get botanists and especially botanical students to think more about plants than about names. By that I mean studying plants instead of merely writing about them. The first was published in *Cestanea*, the second you carried (and it has been commended by many, the third Dr. Fernald accepted and published in *Rhodora* in spite of the fact that it criticized his erection of two one-species new Sections in *Salix*. In all cases I have tried to deal with the principles involved.

I would send this to still a fourth journal except that I hate to put a ~~harsh~~ criticism of a Harvard man in other than a Harvard journal. I have written to Dr. Fernald (yesterday), giving him the basic facts and asking him to retain *S. petiolaris* in the new Manual for the sake of generations of students. You are at complete liberty to send the entire manuscript (and this letter) to him, for review, if you so wish. I have not done so.

I must now get down to monographing.

Cordially yours,

P.S. Will send you some reprints shortly.

Carleton R. Ball

- 840

Sr. A. C. Smith,
Arnold Arboretum of Harvard Univ.,
Jamaica Plain 30, Massachusetts.

3614 Jocelyn St., N.W.,
Washington 15, D.C.
July 30, 1947

Dear Dr. Smith:

On May 14 I sent you a little manuscript containing assorted cuss-words on Dr. Fernald's casting of *S. petiolaris* Smith out of the American flora.

Dr. George H. Turner, of Fort Saskatchewan, Alta., has worked steadily on the problems of height and size of plants, since I wrote him about it. As a result, I wish to make a slight change in the manuscript, if it is to be accepted for publication there.

On page 5A, in line 8 (last line of paragraph), strike out last 3 words ~~xxx~~ ("17.5 ft. high") and insert "each 17.5, 19.5, and 22 ft. in height." The last clause then will read: "and one each 17.5, 19.5, and 22 ft. in height."

Of course, if the manuscript is to be returned to me eventually, don't bother to make the change.

Cordially yours,

Carleton R. Ball

THE ARNOLD ARBORETUM
HARVARD UNIVERSITY

JAMAICA PLAIN 30, MASS., U.S.A.

August 8, 1947

Dr. Carleton R. Ball
Extension Service
United States Department of Agriculture
Washington, D. C.

Dear Dr. Ball:

Your letter of July 30, 1947, has been handed over to me, and the correction has been made in your manuscript, "Salix petiolaris..." which I also am holding. Dr. A. C. Smith is in the Fiji Islands for a year's study, and in his absence I am taking over the editorial work on the Journal of the Arnold Arboretum.

The Journal for the current year is completed; at least the October number is in press, and your paper, if used, will not appear until 1948. With Dr. Smith away, I am unwilling to accept the sole responsibility of publishing a paper of this nature and will await the decision of the combined editorial board, several members of which have read it with varied reactions. As your earlier letter suggested, I have permitted Fernald to read your manuscript.

Sincerely yours

Clarence E. Kobuski

C. E. Kobuski
Assistant Curator

CEK:U

(over)

3814 Jocelyn St., N.W.,
Washington 35, D.C.

Prof. Clarence E. Kobuski,
Asst. Curator, Herbarium
Arnold Arboretum,
Jamaica Plain 30, Massachusetts.

September 15, 1947

Dear Professor Kobuski:

Your letter of August 8 came soon after I had left for a norther vacation. I am grateful to you for inseting the added heights in my manuscript.

I am glad that you gave it to Dr. Fernald for reading. I have just written him, giving facts on single trunks, heights, and blade-lengths, as developed by Dr. Turner this season and incorporated in a manuscript just sent to Canad. Field Nat. by him.

His final notes on leaf-length of sprouts are very significant and I will be glad to have added to paragraph 2 on page 7 the following:

" In late August, 1947, Dr. Turner collected sprouts from plants near Fort Saskatchewan. Five had blades to 5 inches long, one to 5.5 inches, and one (3 sprouts) had blades to 6 inches in length. Later collections probably would show longer blades."

This will be the last addition resulting from his work during this season, as he has just entered hospital for an operation.

I note that Dr. Smith is in Fiji for the year. Hope he has a wonderful time. I note also that members of the Editorial Board have been reading the manuscript with varying reactions. I assume that they will meet presently, vacation being over, and that a decision will be made on publishing the manuscript. I certainly hope that the institution which made the original unbiased conclusion, will stand ready to give ~~XXXX~~ the world of botanists the real facts in the case.

In the meantime, I hope to get back to monographing. Appreciating your help in these various matters, I am

Cordially yours,

Carlston R. Ball

THE ARNOLD ARBORETUM
HARVARD UNIVERSITY
JAMAICA PLAIN 30, MASS., U.S.A.

October 21, 1947

Dr. Carleton R. Ball
3314 Jocelyn Street, N. W.
Washington 15, D. C.

Dear Dr. Ball:

At a meeting of the editorial board of the Journal of the Arnold Arboretum yesterday, it was decided not to publish your paper on "Salix petiolaris" in our Journal. As you know, printing costs have sky-rocketed greatly in the past few months. Since we are operating on a fixed budget, we feel we must restrict our publication, for the most part, to papers by staff members and students, excluding papers by non-staff members, especially when the work was not completed at the Arnold Arboretum or made from the material of this institution. We feel sure you will find other publications very willing to accept your paper.

I am enclosing the returned manuscript with this letter.

Sincerely yours

Clarence E. Kobuski

C. E. Kobuski
Assistant Curator

CEK:U

Mr. Clarence E. Kobuski,
Arnold Arboretum,
Jamaica Plain 30, Massachusetts.

3814 Jocelyn St., N. W.,
Washington 15, D.C.

October 29, 1947

Dear Mr. Kobuski:

I have your letter of October 21 and the rejected manuscript, held for an exceedingly long time. Congratulations to the Editorial Board of the Journal on their acceptance of the principle that Harvard University is free to propagate scientific error but under no obligation to use any of its funds to make public the truth. Let other institutions ~~pay~~ that money. put up And to think that my ancestors settled at Concord in 1636!

As a life-time editor, I recognize the right of any journal to reject any manuscript, giving or withholding the reasons. But when they do give reasons, I feel that they should be the real ones. I have heard from Harvard friends.

Unhindered and unrefuted propagation of error has accomplished two World Wars, at increasingly horrible cost. I assume that the Editorial Board feels the Harvard will be quite secure in the coming atomic warfare, more than ever being falsulated through successful propagation of errors.

I trust that the Editorial Board may read this letter.

Cordially yours,

Carleton R. Ball

C O P Y

Mr. Clarence E. Kobuski,
Arnold Arboretum,
Jamaica Plain 30, Massachusetts.

3814 Jocelyn St., N.W.,
Washington 15, D.C.

October 29, 1947

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I trust that the Editorial Board may read this letter.

Cordially yours,

Carleton R. Ball

3814 Jocelyn St., N.W.,
Washington 15, D.C.

Dr. H. A. Gleason,
N.Y. Botanical Garden,
Bronx Park (Fordham Br. P.O.).
New York 58, N.Y.

October 29, 1947

Dear Dr. Gleason:

I inclose a manuscript entitled "Salix petiolaris, as of Fernald: A Tragedy of Errors". Because Fernald's dogmatic rejection of *S. petiolaris* from the American flora because it is "a British willow", I felt that Harvard Univ. had some responsibility for making public the facts. Accordingly I sent it to Dr. Smith, on May 14, for publication in Jour. Arnold Arboretum. It has just been returned to me, after having considered by the full Editorial Board. The statement is that high costs of printing require that they restrict the Journal to papers originating at the Arboretum. It took them 5 months to discover that. Dr. Smith is abroad for the year.

I wish you would tell me frankly if there is any avenue of publication for it in the Garden papers. Either on the basis of its present size, or reduced to one-half or so by omitting discussion here and there.

It ought to be published in the area where the species is abundant and well known rather than out of its range. I have one paper now in writing at Canad. Field-Naturalist. Could send it to Midland Naturalist.

I have cleaned up a lot of doubtful species and now am turning out the valid ones, for Illus. Flora.

Cordially yours

Carlton R. Ball