



Hunt Institute for Botanical Documentation
5th Floor, Hunt Library
Carnegie Mellon University
4909 Frew Street
Pittsburgh, PA 15213-3890
Telephone: 412-268-2434
Email: huntinst@andrew.cmu.edu
Web site: www.huntbotanical.org

The Hunt Institute is committed to making its collections accessible for research. We are pleased to offer this digitized item.

Usage guidelines

We have provided this low-resolution, digitized version for research purposes. To inquire about publishing any images from this item, please contact the Institute.

About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Ball, Carleton R.
Taxonomic botany: what ails it?
Presented joint session, Bot. Soc. Amer. &
Amer. Soc. Plant Taxonomists,
Washington, D. C., 1948.

(Abstract ^c_A Am. Jour. Bot. (Suppl.)35: 815. 1948.

TAXONOMIC BOTANY: WHAT AILS IT?

By Carleton R. Ball.

Botany is a historic and worthy science. It has made long-continued and outstanding contributions to human welfare in the fields of agriculture, medicine, science, industry, and art. It has helped man to interpret the past of the earth with which he has evolved, and to discover the laws which operate in his own genetic constitution. Botany is ancient, and the mother of many.

Systematic botany, or plant taxonomy, is basic in some degree not only to all of the divisions of botany itself but also to agriculture, horticulture, industry, and medicine, (23). "Increasingly, these must know more and more about the characters and distribution of plants in all parts of the world. Because of these historic developments, and these present needs, taxonomic botany should be highly respected and well supported, as a long-time helper and guide. Apparently this is not the case.

Recently, Fosberg and Diehl (20) stated that: "Systematic botany has traditionally been ill-supported." The writer then suggested some reasons (7). The present paper attempts to analyze and classify various probable reasons why taxonomic botany is disrespected and ill-supported. It covers a study of both principles and practices. The reasons seem to fall into two categories: A, Harmful things done, or permitted; B, Helpful things left undone. The writer knows many taxonomists who unquestionably are men and women of the highest ability, ethics, and social outlook. But there also is another group.

A. Harmful Things Done, Or Permitted.

The harmful things done, or permitted, by taxonomic botanists lay permanent and expensive burdens on millions of others, including workers and students in many sciences. This tends to discredit plant taxonomy, not only among the other sciences but among laymen as well. The 10 suggested items follow.

1. Standards Not Required. Taxonomic botany has no required standards of personnel preparation or fitness, although its products may help or hinder many. Any person, with any kind of training, or none, may publish new genera, species, and/or varieties.

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

and these names must be dealt with forever, either as valid or as synonyms. School teachers must be trained and pass examinations before they can teach even the three Rs. Auto drivers, electricians, plumbers, and public accountants must be examined experts and obtain a license before they may operate. Dentists, doctors, lawyers, and clergymen must be certified before they may engage in their professions. Most of these groups must spend years in study and apprenticeship before receiving certification. Not so taxonomists.

2. Naming, Not Knowledge, of Plants Is Rewarded. The same rewards are bestowed, in taxonomic botany, for creating names as for having knowledge of the plants named (8, 9). In no other profession is this true. Some persons have renamed scores, and hundreds, and even thousands of plants which they never saw, and would never recognize if they did see them. But the names so applied must be recognized, under taxonomic rules, either as valid or as synonyms. No penalty or stigma whatever attaches to the creation of innumerable burdensome synonyms. The burden of proof of validity is always on the user, never on the namer. Nowhere else in science are persons permanently rewarded for confusing people and hindering progress.

3. Selfishness And Fraud Encouraged And Rewarded. Taxonomy is the only science that openly encourages and rewards the innate selfishness of man, and tempts him to fraud. Selfishness, because it insures permanent association of the maker's name with every item, useful or useless, which he creates. Fraud, because selfishness is willing to commit fraud in order to get coveted recognition. Three groups to be considered are the professional name-changers, the species-splitters, and the rank-jugglers. Mention was made of the men who renamed hundreds of species they never saw.

Species-splitters are another pest. Three men (1), Ashe, Beadle, and Sargent, with a few others, ran the species of American hawthorns (Crataegus) from some 25 to about 1300 in 10 years, with the types of three species said to come from the same tree. That was not taxonomy, but athletics,-- a cross-country race. Now nobody can do anything with Crataegus. But recently Murrill (31), a mycologist, named 15 more species from his State. Rubus is being split in the same way. The rank-jugglers have two methods. Some changes gemuses to subgemuses or sections, species to subspecies or

varieties, subspecies to varieties, and varieties to forms. Others operate in reverse and up all entities a rank or two. And always the names of the jugglers become associated with these new combinations. ^{4f} Rydberg, maker of hundreds of new species (28 35 in Salix, mostly synonyms or varieties), seldom compared his new species with the recognized species most nearly related but usually with more distantly related or unrelated species. In the text they were placed away from close relatives and sometimes in another section (32, 33, 34, 35, 36, 37). Small (39) recorded Salix floridana Chapman, universally recognized for 75 years, as a synonym of S. longipes and then, absolutely without explanation, created S. Chammani Small, based on the same type specimen (5). New editions of manuals of botany include, or are preceded by, a flood of new species and varieties, and changed names, sufficient to compel wider purchase. A profession which cannot protect itself from evil-doers will perish.

New discoveries are made, and new theories developed, by chemists, physicists, geologists, mathematicians, philosophers, physicians, and others. Those found to be of no value are discredited and forgotten. No one, except historians, is obliged to mention them again. Not so in taxonomy.

4. Priority of Publication Held Sacred. The god of taxonomic botany is priority of publication, proved or assumed. Permanent rights are assured to the creator of a name (40), without regard for human welfare. This holds, whether the name be valid or synonym, based on knowledge or ignorance, adding to or confusing knowledge, or giving aid or hindrance to thousands. Man is made the slave of names, not names the servants of men. When one wishes to patent a new idea, under law, he must submit it to a jury of experts (Patent Office). If it is found sufficiently new and different to warrant recognition, he must pay a fee to obtain that recognition. And after all that, he gets exclusive rights for only 17 years, not forever.

If taxonomic rules were applied in chemistry, physics, and the other sciences, we would have to cite the name of the author of each scientific theory ^{put forth.} ~~discussed~~. We would always be finding that some one else had mentioned or discussed the same idea previously. Suppose we always had to say, for example: Evolution theory Jones (not Darwin); Gas-pressure law Smith (not Gay-Lussac); Planetary hypothesis Robinson (not

Laplace); and Relativity theory Brown (not Einstein)? How about the names of the chemical elements, the planets, or the days of the week or the months of the year? Should not the law of priority of name be applied?

5. Recognizing Priority Claimed to Produce Stability. The insistence on the sacredness of priority is based on a fetish known as stabilizing nomenclature. Fosberg and Diehl (20) referred to the contribution made by systematic botany to "stabilizing nomenclature." Some taxonomists are sincere in this belief while others seem to use it as a ~~cloak~~ for the actions previously discussed. The writer defines any person to compare the successive manuals of botany published in America in the last 100 years and produce any indication whatever that nomenclature is being stabilized. If permanent priority rights never had been established as a principle of taxonomic botany, we could have had a relatively stable nomenclature long ago. As it is, all workers in botany and related sciences are compelled to learn a new set of generic and specific names for most plants every 25 or 30 years. This is a maddening and absolutely unnecessary waste of time, energy, and money. And two new manuals are about to appear.

6. Creation of a New Profession:- Synonymy. Application of the present principles and practices in systematic botany has created a new scientific profession:- Synonymy taxonomy, but (7). It is fully as difficult and expensive as ~~taxonomy~~ works only with dead bones and produces no useful results. And we are only at the beginning, as current publications show. All working taxonomists are compelled to spend an increasing percentage of their time in the study of previously published names, leaving less and less time for the study and legitimate naming of plants. The writer knows from sad experience. The money expense of taxonomy is increased in exact proportion to the time spent on synonymy. The products of one careless, ignorant, or dishonest person may cause long and expensive labor to many other workers much more able. And the burden is always on the careful, informed, and honest.

7. Inconstant Characters Given Undue Weight. Some taxonomists base new forms and varieties, and even species, on supposed differences in hairiness or twig color (10, p. 182), or both. These characters often vary with the age of a vegetative organ in weeks or months, as well as in years. They may vary likewise with vigor of growth, with exposure to sun, with the nature of the substratum (silt, clay, sand, gravel, rock), and the degree to which that substratum has vegetative cover. These varying expressions, sometimes on the same plant, are often strikingly apparent. They should be studied and recorded, but mostly they are physiological and not genetic in origin. Sometimes both hairs and color disappear temporarily with dehiscence of the epidermis from young twigs in early spring. Twig color also may be affected markedly by treatment in the plant press. It would require a small volume to describe and discuss these seasonal, annual, and habitat and exposure changes, even for the willows.

Taxonomists should reflect upon the successive changes in quantity, character, length, and color of the hairs on the different organs of a single human body, from birth to extreme old age. Skin color also varies greatly with exposure to sun. But all of these changes in hairiness and skin color occur on the same individual, and not on a new form or variety with each successive change.

8. Describing New Species From Fragmentary Material. Many new species of Salix have been based on a single collection. Some even have been described from a single specimen of such a collection. In Salix, any single collection represents but one sex. Usually, also, unless repeated visits are made to the plant, such collection represents only one stage of development. There are three fairly ~~represent~~ different vegetative stages, - the spring, summer, and autumn growth (4, 8). Leaves often are quite different in shape when unfolding, mid-sized, and fully grown. Aments may be preflowering, in flower, in young fruit, or in mature fruit. In some species, fruit is nearly mature before leaves appear at all, and vice versa. Usually, therefore, a single collection is but a fragment of a fraction of the total. If very juvenile, it is but a fragment of that fragment of that fraction. Furthermore, a type specimen should represent an average, not an extreme.

One may argue that no taxonomist would base a new species on a single collection in juvenile condition. But they do, over and over. For example, Salix Sandbergii ^{juvenile} Rydberg ~~XXX~~ (36), based on a single/collection from Idaho in 1892, was published in 1912. It lay unrecognized for 20 years more. In 1932, mature specimens were collected from a peculiar S. lasiolepis in northern California and, in early 1933, juvenile specimens were taken from the same plant. Memory recalled Rydberg's type and comparison proved S. Sandbergii to be a variety of S. lasiolepis (2).

9. Misleading Inaccuracy in Publication. In the ABCs of scientific writing, A stands for accuracy, without which there is little value. Benson (13) argues for really knowing the things you publish and so being accurate as far as you go. Rydberg (37) consistently misspelled Barratt as Barret, and Rowlee as Rowley, in 1917 although Barratt had been correctly spelled (or edited) in 1901/ (34). In Hulten's history of Alaska explorations (24), many obvious errors were noted. One item covering the collecting trips of Dr. and Mrs. Setchell in 1931 and 1932 will suffice. In its 23 lines there are four misspellings of proper names and eight misstatements of fact, or an average of one error in each two lines. Yet all names were correctly spelled, and all facts correctly stated, in a published paper (3) ^{and on the plant labels,} /to both of which Hulten refers.

Rydberg stated in ~~XXXX~~ 1899 that the leaves of his Salix petrophila were "narrower and greener" (32) than those of S. anglorum, and in 1917 that they were "slightly paler . . . beneath" (37). But in 1899 he cited numerous specimens of it having leaves which were glaucescent to glaucous beneath. In 1906, he also keyed the entire section Arcticeae (Glaucæ) as having "leaves green or grayish beneath" ~~XXX~~ (35), although, as the name indicates, the leaves of all species are normally glaucous beneath. Schneider (38, p. 136) ~~said~~ that the leaves of S. petrophila "are not distinctly paler and never whitish beneath" and then himself annotated, as that species, some scores of specimens with leaves glaucescent or glaucous beneath.

Rydberg (32, p. 263) keyed his oblanceolate-leaved S. petrophila as "obovate" and Kennedy (26), looking only at the key and not at the plants cited, redescribed the oblanceolate-leaved plant (hairy form) as a new species. Beetle (12) discussed

- 7 -

the history and use of a grass which he claimed to be a published Agropyron japonicum Tracy, and then renamed a later Agropyron japonicum Honda and its ~~was~~ variety. Mrs. Agnes Chase, the agronomologist, states that the grass Beetle actually had was A. semicostatum and that Tracy's name never was validly published. The renaming, therefore was wholly unjustified and Beetle merely misled agronomists and burdened taxonomists.

Fernald (18, p. 48) erroneously proclaimed that Salix petiolaris was a British plant and renamed our American plant. All British and American botanists concerned had agreed, some 125 years before, that it was American, and the British writers had revealed why it differed somewhat (cutting-planted stems, unfertilized capsules, sprout-leaves figured) from American descriptions (10).

10. Taxonomic Action Based on Absurd Theories. Wheeler (44) tells that the search for new entities to publish is the bane of systematic botany. It looks different, name it. Willis (45), in Australia, waxed caustic about invalid "new" genera described by a "visiting scientist swept away" by the newness of everything and "rushing recklessly into print". Mixrill, who is a mycologist but describes new Crataegus (31) and Salix (see 5), develops a theory for the psychology of certain taxonomists. "A man's (taxonomic) boldness varies as the weather. One day the best of species appear only as varieties; the next reveals new species on every horizon" (30). Apparently he publishes only on the "next" day.

Two recent European examples, both used extensively in Salix, should be noted. A German group finds an unlimited field for continued taxonomic activity by recognizing seven successive levels of entities below the species. These are: subspecies, variety, subvariety, form, subform, sub-subform, and sub-sub-subform, to all of which Latin names are given. They claim to be able to recognize these successive levels in the fragments which constitute herbarium specimens of woody species. The complete absurdity of their proposals is realized when one studies a living plant throughout one year. From two to five of these alleged entities of one level can be found on such one/plant. The urge to make names must be a contagious disease.

Floderus, a Swedish salicologist, evolved the theory that practically all willows are hybrids. Studies by the writer and others on thousands of living plants and tens of thousands of herbarium specimens give no support to his theory. Worse still,

he asserts his ability to recognize, from dried herbarium specimens, not only simple (double) hybrids but also triple, quadruple, and even quintuple hybrids, or those having two, three, four, and even five different parents. Every working geneticist knows the impossibility of recognizing such intricate degrees of hybridization even in living plants, let alone in dried fragments. He also changes the order of the alleged parents, on different specimens, according to supposed differences in the expression of component characters. Completely ignoring well-known and clearly distinguished species, he renames herbarium material on this fantastic basis. Here we have, not mere disease, but clear insanity.

B. Helpful Things Left Undone.

Below are listed five major activities which plant taxonomists should have been promoting. Science, like Christianity, exists to render service to mankind, not to profit itself. Taxonomic botany is no exception to that requirement. Its service obligation (23) includes making plants more easily and widely known to many different groups of people, who are, or should be, interested. Plants include those wild and those cultivated, those native to a country or an area, and those introduced thereto.

Groups may be professional or amateur. Some professional groups are concerned scientifically, as anatomists, conservationists, cytologists, ecologists, geneticists, mycologists, pathologists, physicians, physiologists, etc. Some are concerned both scientifically and commercially, as agronomists, floriculturists, foresters, horticulturists, manufacturers, etc. Amateur groups include teachers, farmers, housewives, parents, youth groups, boys' and girls' clubs, nature lovers, tourists, recreationists, etc., which includes all of us.

1. Conservation of Widely-Used Specific Names. Specific names are the handles by which we use plants as tools for study, and work, and play. If these handles are changed again and again into unfamiliar shapes and sizes, it causes expensive loss of time in finding, and facility in using, these tools. This is true equally for professionals and for amateurs. With such constant and confusing changes, it is small wonder that plant taxonomy is disrespected and ill-supported.

If taxonomists really wanted stability of nomenclature, they would have worked hard long ago to increase it through conserving long-used and widely known specific names. If a name had been in general use for say 25 or 50 years, priority of an earlier unused name would be refused recognition. Even the absurdly long-time requirement of 100 years would help. For one good example, Fernald (18, pp.13-16) in 1946 claimed that the Salix names of Michx. (Flora Br. Am., 1803) had a few months of priority over those of Mühlenberg (Nordamer. Weiden, 1803 or 1804). So Salix cordata Muhl., the name in common use here and abroad for 142 years, must be pushed out by S. cordata Michx. But Michx.'s cordata is an entirely different species which had been known as S. adenophylla for 108 years, so Hooker's long-used name goes out too. What difference could it possibly make to Michx. if his long-neglected name should remain buried? But millions of living persons must be burdened by these wholly unneeded changes.

Many taxonomists and others have discussed these matters. Some, as Fernald (17), Fosterberg (19), and Weatherby (44), and others, have dealt with the species, subspecies, and variety concepts, the stepping-stones of the rank-jugglers. Many taxonomists explore these conditions (5, 7, 8, 9, 10, 11, 14, 15, 16, 21, 22, 25, 27, 28, 29, 40, 41, 42, 43, 45). Some advocate rules for the retention of long-used specific names (15, 21, 27, 28), but the majority refuse to permit it. The last International Congress of Botany, in 1935, voted against it (3) by 206 to 61, or 3.4 to 1.

2. Helping to Classify Crop-Plant Varieties. Years ago, it was realized that the man-made cultivated varieties of horticultural and agronomic crops varied markedly in ecological, physiological, and genetic characters. As these varieties increased in numbers, became more and more widely distributed, and received many new names in different areas, the need for their accurate description and classification became increasingly acute. Here was a rich opportunity for taxonomists to give aid to crop-men, but no such help seems ever to have been offered. Excellent systematic work has been done on the varieties of cereals, forages, fruits, and vegetables, but apparently it has been done by the crop specialists themselves. In most cases, they had to train themselves for the work, including the search for primitive forms in ancient areas.

Active interest and help by taxonomists would have led to greater respect for them and better support for their work.

In the similar but less extensive work with fiber plants, oil plants, drug and medicinal plants, and other specialized groups, systematic botanists probably have played a larger part. This seems true because much more of the material used has been wild species gathered in many widely separated parts of the world.

3. Making Taxonomy A Living Subject to Students. Taxonomic botany is the revealing study of the living cover of the whole wide out-of-doors. Here are the floral mantles of of mountain and plain and shore, of desert and dune and swamp. She can be made alive, satisfyingly, through the miracles of myriad forms of stem and leaf and flower, by the witchery of bright and varied colors and coverings, and in the manifold mysteries of adaptation to habitat and association. Yet the unlocking keys which should have been based primarily on vegetative characters, more evident and longer-enduring, have been based instead on the often minute and quickly disappearing floral characters. Why?

Many students who have sought her for the beauty of the living have found themselves becoming the jugglers of names, the dry bones of the dead. Many who have asked the bread of knowledge have been handed the stones of an ever-shifting, rule-bound nomenclature. Small wonder that there is disrespect and ill-support. When biology was "humanized at the freshman level," in one midwestern university, a dean said to the president, "I have seen a miracle on this campus". "What have you seen", was the reply. "I have seen a botany class out-of-doors, looking at a plant."

4. Encouraging and Leading Nature Lovers. In recent years, humanity has taken to the out-of-doors as never before. Clubs for hiking, mountain climbing, swimming, skiing, conservation, education, and health, as well as groups of flower lovers, bird lovers, nature students, summer campers, boy scouts, girl scouts, and many others have increased in numbers and fared farther afield. Botany is one of the three heirs of creation, sharing with zoology and geology. Plants are nearest to man, in use and appreciation. Occuring everywhere, they can be seen, smelled, admired, and studied, and so contribute much to the joy of outings. But apparently few taxonomists help or lead these nature-seeking groups. A great and rewarding privilege is neglected.

5. Mixing Freely With Other ~~Taxonomist~~ Scientific Groups. It has been noted by others that taxonomists apparently are not good mixers. The Botanical Society of Washington naturally is composed largely of workers in applied botany, because of the many members from the Department of Agriculture and Interior. Perhaps more than anywhere else in America, therefore, those who attend may have their interests broadened and their knowledge increased. But apparently most of the taxonomists seldom attend the meetings or show interest in making contacts with the other specialists. Such aloofness naturally does not increase their interests or knowledge, and their prestige suffers because they do not sell their specialty to other groups.

The process of friendly give and take in discussion is an excellent means of reducing personal idiosyncrasies and deflating exaggerated egos. If taxonomists do not mix readily with other scientific groups, they miss many of these helpful influences. If they do not so mix, habitually, what are the reasons? One botanist has gone so far as to suggest (in letter) that taxonomy attracts the introvert type of worker, with more or less of an inferiority complex. In other words, those who are unwilling to face real competition tend to seek a profession where there are no standards or certifications required and where the laws of priority and synonymy afford them a sense of security in achievement. Unquestionably, there are many taxonomists of the highest standards of ability, ethics, and social outlook. But there also is the other extreme.

C. In Conclusion.

Taxonomists complain that systematic botany "traditionally has been ill-supported". In view of this series of harmful things done, or permitted, by them, and the helpful things left undone, it scarcely seems surprising that taxonomy does not have the respect and support which the importance and usefulness of the profession would warrant. It is possible to change these attitudes of taxonomists and thereby to remedy these unfavorable conditions. The time to start doing that is now.

Literature Cited

1. Ashe, William A., Forest Service; Beadle, Chauncey D., Biltmore Herbarium; Sargent, Charles S., Arnold Arboretum. (See extensive list of papers on *Crataegus* by them).
2. Ball, Carleton R. New varieties and combinations in *Salix*. Jour. Wash. Acad. Sci. 28:443-452. 1938. (*S. lasiolepis* var. *Sandbergii*, pp. 448-450).
3. ----- Dr. Setchell and Alaska willows. Madroño 5:231-232, pl. 24. 1940.
4. ----- ~~None~~ ----- Illustrating plant organs for taxonomic purposes. Castanea 8:67-71. 1943.
5. -----p *Salix floridana* Chapman, a valid species. Journ. Arnold Arb. 24:103-106, pl. 1. 1943.
6. ----- Taxonomic botany in an agronomic journal. Jour. Amer. Soc. Agron. 37:660-661. 1945.
7. ----- Why is taxonomy ill-supported? Science 103:713-714. June 14, 1946.
8. ----- More plant study: Fewer plant names. Journ. Arnold Arb. 27:371-385. 1946.
9. ----- Studying willows or making new sections in the genus *Salix*. Rhodora 49:37-49. 1947.
10. ----- *Salix petiolaris* J.E. Smith; American, not British. Bull. Torr. Bot. Club 75:178-187. 1948.
11. ----- *Salix anglorum* and *Salix petrophila* reviewed. Amer. Midland Nat. (in press).
12. Beetle, Alan A. *Agropyron japonicum*, an untenable name. Jour. Amer. Soc. Agron. 37: 320. 1945.
13. Benson, Lyman. A reply to Dr. Polunin. Bull. Torr. Bot. Club 71:254-257. 1944.
14. Camp, W.H. The herbarium in modern systematics. Amer. Naturalist 77:322-344. 1943.
15. Core, Earl L. The need for revision of the International Code of Botanical Nomenclature. Castanea 10:116-119. 1945.
16. Dayton, William A. Wildlife Note: Should plant taxonomists be controlled by an open season or otherwise, or altogether suppressed? Jour. For. 41:369, 371-2. 1943.
17. Fernald, M. L. Some spermatophytes of Eastern North America. Rhodora 42:239-246. 1940.
18. -----, ----- Difficulties in North American *Salix*. Rhodora 48:13-16, 27-49, pls. 995-1006. 1946.
19. Fosberg, F. Raymond. Subspecies and variety. Rhodora 44:153-157. 1942.
20. -----, ----- and William W. Diehl. Present status of foreign herbaria and museums. Science 103:282-283. Mar. 1, 1946.

22. Harlow, William M. Scientific names and their vagaries. Jour. For. 40:960-962. 1942.
23. Hitchcock, A.S. Taxonomy as a fundamental factor in botanical research. Science 79:407-408. May 4, 1934.
24. Hulten, Eric. History of botanical explorations in Alaska and Yukon Territories from the time of their discovery to 1940. Bot. Notis. 1940 (3):239-346. 1940. (p.).
25. Keck, David D. The proposed taxonomic journal. Chron. Bot. 6:73-79. 1940.
26. Kennedy, P. B. Alpine plants: V, A new willow. Muhlenbergia 7:133-136, figs. 1912.
27. Little, Elbert L. Jr. A proposal to stabilize plant names. Phytologia 2:451-456. 1948.
28. Martin, A. C. Instability in scientific names of plants. Am. Midland Nat. 34:799-800. 1945.
29. Moldenke, Harold N. An alphabetical list of invalid names proposed in the Verbenaceae and Avicenniaceae. 59 pp., processed. 1942. Edwards Bros., N.Y.
30. Merrill, William A. Species making. Amer. Bot. 48:79-82. 1942.
31. -----, ----.
32. Rydberg, P. A. Caespitose willows of Arctic America and the Rocky Mountains. Bull. N.Y. Bot. Garden 1:257-278. 1899.
33. -----, --- Studies on the Rocky Mountain flora V. Bull. Torr. Bot. Club 28:271-273. 1901.
34. -----, ----, in Britton, Mammal, pp. 310-320. 1901.
35. -----, ----, Flora of Colorado. Colo. Agr. Expt. Bull. 100: (Salix) 92-96. 1906.
36. -----, ----, Studies on the Rocky Mountain flora, XXVII. Bull. Torr. Bot. Club 39: 301-328 (S. Sandbergii, p. 304). 1912.
37. -----, ---, Flora of the Rocky Mountains and adjacent plains. (Salix) 187-199. 1917.
38. Schneider, Camillo. Notes on North American willows: 1, The species related to Salix arctica Pall. Bot. Gaz. 66:117-142. 1918.
39. Small, John K. Mammal of the Southeastern flora. pp. 414, 1504. 1933.
40. Smith, A. C. Stability in nomenclature. Science 91:572-573. 1940.
41. Symington, C. F. Botanical name-changers. Malayan For. 6:193-199. 1937.
42. Weatherby, C. A. Subspecies. Rhodora 44:157-167. 1942.
43. Weatherby, C. A. and Marjorie W. Stone. A plea for the elimination of unnecessary nomenclatorial changes. Rhodora 46:201-204. 1944.
44. Wheeler, Louis Cutter. Trends in plant taxonomy. Amer. Jour. Bot. 27:(Suppl.)25s. 1940.
45. Willis, John H. Botanical "bulls". Victorian Nat. 59:72. 1942.

- 4
- Benson, Lyman. A reply to Dr. Polunin. Bull. Torrey Bot Club 71:257-257. 1944.
(argues for knowing what you publish & so being accurate) *as far as possible*
- Camp, W.H. The herbarium in modern systematics. Amer. Naturalist 77:322-344. 1943.
On (decries craze of nomencl. juggling)
- Core, Earl L. The need for revision of the International Code of Botanical Nomenclature.
(vigorous discussion & quotes Harlow.) Castanea 10:116-119. 1945.
- Fernald, M.L. Some spermatophytes of Eastern North America. Rhodora 42:239-276. 1940.
(discusses Linnean & later usage in concepts of subsp. & vars. (239-246))
- Fosberg, F. Raymond. Subspecies and variety. Rhodora 44:153-157. 1942.
- Harlow, William M. Scientific names and their vagaries. Journ. For. 40:960-962. 1942.
(includes table of recently changed names of trees and shrubs)
- Keck, David D. The proposed taxonomic journal. Chron. Bot. 6:78-79. 1940.
(good hints on increasing quality of taxonomic papers)
- Martin, A. C. Instability in scientific names of plants. Amer. Midland Nat. 34:799-800. 1945. (Proposes Committee of Am. Soc. Bot. to prepare plans for conservation of old names)
- Moldenke, Harold H. An alphabetical list of ~~the~~ invalid names proposed in the Verbenaceae and Avicenniaceae. 59 pp., processed. 1942. Edwards Bros., N.Y. City.
- Murrill, William A. Species making. Amer. Bot. 48:79-82. 1942. (A man's (taxonomic) boldness varies as the weather. One day . . . the best of species appear only as varieties; the next reveals new species on every horizon)
- Smith, A. C. Stability in nomenclature. Science 91:572-573. 1940. (art)
(plea for fair trial of present system, for "another thousand years" if necessary)
- Symington, C. F. Botanical name-changers. Malayan For. 6:193-199. 1937.
(condemns spp. splitters & lack of care but thinks changes clear errors)
- Weatherby, C. A. Subspecies. Rhodora 44:157-167. 1942.
- Weatherby, C.A., and Marjorie W. Stone. A plea for the elimination of unnecessary nomenclatorial changes. Rhodora ~~44~~ 46:201-204. 1944.
(trouble caused by failure to make proper citations and consequent lack in Gray Herb. Card Catalog, & similar works)
- Wheeler, Louis Cutter. Trends in plant taxonomy. Am. Jour. Bot. 27: (Suppl. 25 s. 1940)
(search for new entities to describe is bane of systematic botany)
- Willis, John H. Botanical "bills". Victorian Nat. 59:72. 1942. *W*
(Caustic discussion of invalid "new" genera described by "visiting scientist swept away" by newness of everything, and "rushing recklessly into print".)

ABSTRACTS OF THE PAPERS PRESENTED BEFORE THE BOTANICAL TEACHING GENERAL
MICROBIOLOGICAL, PALYNOLOGICAL, PHYSIOLOGICAL, AND SYSTEMATIC
SECTIONS OF THE BOTANICAL SOCIETY OF AMERICA

Washington, D. C.

September 10 to 13, 1948

RALL, CARLETON R. 4814 Jockelyn St., N.W., Washington 15, D. C. *Plant taxonomy: what and whatnot?* Plant taxonomy is said to be ill supported. Two groups of probable reasons are: A. Helpful things left undone. B. Harmful things done. A. Taxonomy has given little interest or help to identification and classification of field crop varieties. Taxonomists have not encouraged or led the nature lover, armistice or interpreted the plant world to them. Many taxonomists seem uninterested in mixing with colleagues in other botanical fields. Taxonomy has no requirement for participation or standards of performance. B. Taxonomy necessitates that any person may publish novelties, which must be reckoned with forever, either as valid or as synonymous. Taxonomy encourages ignorance by giving no weight to the quality of a name or to the quality of the work. Taxonomy places priority in publication instead of conservation of long used specific names to stabilize nomenclature, thereby creating burdensome synonymy. Taxonomy recognizes species splitting as legitimate, thus rewarding selfishness and fraud. 25 *Crotalaria* species killed to 1400. Taxonomy recognizes novelties based on a single collection, often fragmentary and sometimes on recognizably juvenile. Taxonomists often confuse by stressing changeable characters, such as hairiness or color of epidermis, as if permanent. Taxonomists accept the products of untenable theories, such as near universal multi hybridization and recognizability of five different parents in a dried fragment, or the existence of seven identifiable taxonomic categories below species. Taxonomy does not penalize repeated obviously erroneous statements, either in descriptions or in other data.

What and Whither? Plant taxonomy is said to be ill-supported. Two groups of probable reasons are: A, Helpful things left undone; B, Harmful things done. A. Taxonomy has given little interest or help to identification and classification of field-drop varieties. Taxonomists have not encouraged or led the nature-lover armies or interpreted the plant world to them. Many taxonomists seem uninterested in mixing with colleagues in other botanic fields. Taxonomy has no requirements for participation or standards of performance.

B. Taxonomy maintains that any person may publish novelties, which must be reckoned with forever, either as valid or as synonyms. Taxonomy encourages ignorance by giving rewards for making names, not for knowing plants. Taxonomy upholds priority of publication instead of conservation of long-used specific names to stabilize nomenclature, thereby creating burdensome synonymy. Taxonomy recognizes species-splitting as legitimate, thus rewarding selfishness and fraud (25 Crataegus species kited to 1500). Taxonomy recognizes novelties based on a single collection, often fragmentary and sometimes unrecognizably juvenile. Taxonomists often confuse by stressing changeable characters, such as hairiness or color of epidermis, as if permanent. Taxonomists accept the products of untenable theories, such as near-universal multi-hybridization and recognizability of five different parents in a dried fragment, or the existence of seven identifiable taxonomic categories below species. Taxonomy does not penalize repeated obviously-erroneous statements, either in descriptions or in other data.

(For Joint Session, Systematic Section, Botanic Society of America, and American Society of Plant Taxonomists. 1948)

1948
Dr. H. A. Gleason,
New York Botanical Garden,
Bronx Park, Fordham Br. P. O.,
New York, N.Y.

3814 Jocelyn St., N.W.,
Washington 16, D.C.

Sept. 16, 1948

Dear Dr. Gleason:

Yesterday I took a day off, to rest my head, and used the time to make a second revision of the manuscript on which I based my talk about taxonomy. It is still rough draft but in nearly its final form. Worse still, it runs to 3500 words.

On one point, I am not completely decided and will value your counsel. Should I name all the taxonomists whose works I take in vain? I had done it with some but not for all. On Tuesday I talked with Dr. Fosberg, who cordially disapproves most of what I have written. He thinks that I should name all of those to whose work I refer. I am inclined to agree.

Those named will have a parenthetic number referring to "Literature cited", where I will cited the publication under discussion.

Cordially yours,

Carleton R. Ball

P.S. I forgot to say that I appreciated the little note from you which I found in my chair.

SATURDAY 25 OCTOBER

For every point you mentioned
I could add other examples from
my own experience, all of them
making me hot under the collar

Gleason

Walter F. Fernald

Olmsted, C. E.

The University of Chicago

CHICAGO 37, ILLINOIS

The Botanical Gazette

September 29, 1948.

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

Dear Dr. Ball:

This will acknowledge receipt of your manuscript, "Taxonomic Botany: What Ails *Lt?*" which was submitted for publication in The Botanical Gazette.

Dr. Olmsted is away at this time so no immediate action can be taken on the paper. As soon as possible after his return, however, he will contact you about it.

Very truly yours,

J. Patricia Cunnea.

J. Patricia Cunnea
Assistant to the Editor.

The University of Chicago

CHICAGO 37, ILLINOIS

The Botanical Gazette

November 16, 1948

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

Dear Dr. Ball:

It has taken a considerable length of time to come to an opinion about your paper "Taxonomic Botany: What ails it." With considerable regret I am returning it to you since I certainly think that it should be printed, as do all the non-taxonomists to whom I have referred it.

There are a number of reasons, however, not all of which I have time to go into, why it has seemed unwise to use it in the Gazette. We have published nothing in the field of classical taxonomy for 12 years or more. In my 2½ years as editor, I have received only one manuscript based entirely on herbarium taxonomy. Many taxonomists no longer regard the Gazette as a journal which they should consult or to which they might send manuscripts. This opinion was developed in large part while Dr. Kraus was editor, since he was compelled for a number of reasons, including some of those discussed in your paper, to refuse certain taxonomic articles. I have followed the same policy in dealing with the one article referred to. Thus, if we were to print your paper, we should be in the doubly embarrassing position of giving space to a criticism of taxonomists without giving any space to taxonomic research. This seems somewhat unwise, since we are not unsympathetic to good taxonomic work. More important, however, I do not wish to be placed in the position of feeling obligated to give space to those who might wish to reply to you, even though most of your points are unanswerable.

We have in recent years considered the Gazette primarily as a journal reporting research. At the present time we have such a backlog of research articles on hand that the ones now being submitted cannot appear for almost a year. Under the circumstances we are obliged to be somewhat arbitrary as to what material we can best give up.

I trust that you will understand my position and hope that some other editor will have fewer reasons--which he will think good--for not accepting your paper. I repeat that I should like to see it in print and really regret that our past history and present situation make it seem inadvisable for us to take it.

Sincerely yours,

Charles E. Olmsted
Charles E. Olmsted
Editor

CEO/h