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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.

WHY BURDEN THE FORMS OF DOMESTICATED PLANTS WITH A LATIN NOMENCLATURE? ✓

BY Carleton R. Ball.

(Received for publication

1925)

My theses are three. (1) That systematic description and classification of the forms of domesticated plants are as important and necessary as are similar treatments of wild plants. (2) That taxonomic characters sufficient to distinguish species, sub species, and varieties of wild plants are not sufficient to separate the same botanical categories of the more variable domesticated plants. (3) That a Latin nomenclature for agronomic and horticultural forms lower than botanical species, subspecies and varieties is undesirable and unnecessary.

1. Importance of Describing and Classifying Domesticated Plants.

All workers with plants seem agreed on the importance and necessity of properly classifying cultivated plants. The need for a more definite knowledge of the characters and relationships of his working material is realized by nearly every agronomist and horticulturist. The geneticists, plant breeders, cytologists, ecologists, and physiologists likewise feel the need of more certain identity of the material used. The only question has been as to the nature of the nomenclature and classification and by whom it best can be undertaken. Most taxonomic workers have been content to leave the job to the florist, the gardener, the horticulturist and the agronomist. Others have regarded it as the proper function of the systematic botanist.

✓ Read before the Systematic Section of the Botanical Society of America at the Washington Meeting, December 30, 1924

Dr. L. H. Bailey (2, p. 62⁵¹³), long concerned with the botany of cultivated plants, gave voice to his views before the National Academy of Science 8 years ago as follows:

indent

"I had hoped that, in the beginning of the plant-breeding studies, the breeder would also be a pronounced systematist, that he would aid us in the definition of the forms of plants, and bring his experimental studies to bear in tracing the probable course of evolution up to this epoch, that is, that he would contribute more freely to the knowledge of origins. I still think that we shall find the experimenter relating his work more closely to systematic botany as soon as the systematist takes cognizance of the plant-breeder, and the plant-breeder is satisfied that he must analyze his measurements in terms of biological definition and classification. I doubt the adequacy of some of the biometrical computation, and I regret the frequent neglect of herbarium studies whereby vegetation-factors rather than measurement-factors may be strongly emphasized."

The shift of botanical emphasis from cultivated plants to wild ones was a process of evolution like all other movements. The writer, in two previous papers (3, p. 325; 4, p. 554), has speculated on the possible causes for this shift. Whatever the cause, the ultimate effect was to stop any monographic study of cultivated plants by systematists. In the absence of monographing, however, the casual describing and naming of so-called species of domesticated plants went merrily on.

12 Numerals in parentheses refer to "Literature Cited" at end of paper.

2. Comparative Value of Diagnostic Characters in Wild and Cultivated Plants.

The characters most used in describing plants are the presence or absence of various organs, and their form, vesture and color, when present. There is a more or less definite concept of the degree of divergence from a known form of a wild plant required to warrant the establishing of a related new one of the same or lesser rank. This concept is based on a general knowledge of the limited degree of variability in characters distinguishing wild species and varieties. Systematists have observed for centuries the enormously larger variability of long-domesticated plants under cultivation. In spite of the teachings of such observations, however, large numbers of botanists have continued to separate species of domesticated plants by the same degrees of difference that are considered valid in the realm of feral plants. Nothing can be more erroneous than this viewpoint.

Most systematic botanists are fairly familiar with the bewildering diversity of form and color in some or many of the organs of the dahlia, rose, squash, potato, apple, wheat, corn, and sorghum. Can any one claim that these numerous forms represent as many species as would be accepted if the variation was in a wild stock? Assuredly not! We cannot admit that they represent species at all. And yet we have about 100 so-called species of cultivated wheat on the statute books. There likewise are about 90 to 100 so-called species of cultivated sorghum to worry or to forget about, as seems best. The numbers of "species" proposed in the other groups mentioned have not been tabulated but they are more than sufficient.

The making of alleged species of Triticum has continued from Linnean days until the present century. Yet throughout the two centuries there have been able systematists who knew better and said so. As early as 1786, Lamarck (11) began reducing the species of his predecessors. In the 20 years from 1866 to 1885 appeared four important works by French and German authors classifying wheat. These authors were Alefeld (1), Heuzé (8), Koernicke (9), and Koernicke and Werner (10). The species of cultivated wheat recognized by them varied from 2 genera with only one species in each to 8 species of Triticum.

Agronomists usually recognize eight natural groups of wheat and wheat allies, the not necessarily of coordinate botanical rank. These, with the latin names under which they have been best known, are common wheat (Triticum sativum Lam.), club wheat (T. compactum Host), poulard wheat (T. turgidum L.), durum wheat (T. durum Desf.), spelt (T. spelta L.), emmer (T. dicoccum Schrank), einkorn (T. monococcum L.), and Polish wheat (T. polonicum L.)

The most discriminating botanical treatment of wheat is that of Hackel (7) in 1887. He includes all the 8 groups of the agronomists, but in three different categories. He recognizes 3 species, namely, sativum Lam. (sensu lato), monococcum L. and polonicum L. Under sativum he establishes 3 subspecies, namely, spelta (spelt), dicoccum (emmer), and tenax. The first two are former species. The last includes 4 varieties, formerly species, namely, vulgare (common), compactum (club), turgidum (poulard), and durum (durum). While this sensible reduction was going on, the number of subspecies and varieties recognized under latin names increased enormously, however, as will be noted later.

The easily observed and completely analogous case of domesticated animals should have served as a timely warning to botanists. Consider the great variety of forms, vestures and colors, or combinations of these, exhibited by the numerous breeds of the relatively few species of man's animal helpers. Among these are goldfish, pigeons, fowls, rabbits, cats, dogs, hogs, sheep, cattle and horses.

Consider cattle, noting the great differences shown by such breeds as the Jersey, Devon, Ayrshire, Holstein, Dutch Belted, Brown Swiss, Shorthorn, Hereford, Red Poll and Aberdeen Angus, not to mention the old Longhorn. Are these separate species? Certainly not! Again, let us think of horses. Are we to insist that the Shetland, Morgan, Arabian, Clydesdale, Percheron and Shire, as well as the mustang, bronco, pinto or cayuse are different species because of these man-made variations? Among fowls, take note of the marked differences in size, form and color between such breeds as the Bantam, Spanish game, Leghorn, Plymouth Rock, Wyandotte, Rhode Island Red and Giant Black. Finally, meditate on the outstanding variation between the airdale, collie, bulldog, dachshund, Great Dane, grayhound, mastiff, Pekinese, Pomeranian, pointer, setter, St. Bernard, Spitz and terrier. What wonderful "specific" differences they show.

No reputable zoologist has made himself and his science ridiculous by insisting that these various forms of domesticated animals are species. Nor is one likely to do so. Why then should the systematic botanist do this thing in his similar field of effort, to the endangering of his reputation for common sense and the harming of the art he seeks to help?

The Burden of Latin Nomenclature

Someone asks "What possible harm can it do to apply latin names to agronomic and horticultural entities of the lower ranks"? It does harm in 3 ways. It ^emasses up literature with two sets of names where one is sufficient and two are a nuisance. It gives a fictitious appearance of equality to entities of vastly different rank. It frightens non-nomenclatorial crop workers away from their obligation to describe and classify their material. Finally it invites the attention of the little mind whose fetish is priority in nomenclature. Heaven forbid that agronomy or horticulture endure the horrors of modern so-called taxonomy with its conception of man made for nomenclature and not nomenclature made for man.

Imagine the roar arising if a zoological friend should insist on our calling the greyhound "Canis domesticus, subspecies velox, variety attenuatus, forma coeruleo-canescens." Meditate on the language of the cattle breeder asked to designate his Herefords as "Bos taurus, subspecies carniferus, variety brevicornis, forma albifrons." And yet I am asked to record a certain wheat variety as Triticum sativum, subspecies tenax, variety vulgare, sub-variety lutescens, forma inermis, strain albiglumis, agronomic variety Marquis. What can a self-respecting agronomist say to such a proposal? I say "Damn". (That is not profanity, it is merely an expression of mild disapproval).

Wheat is a good subject for discussion for, as noted previously, botanists have erected some 100 specific names for cultivated wheats. You ask how many of these are synonyms of others. I answer that I do not know, nor do I care. You ask how many are valid species. I answer that possibly 3 may be so regarded. What useful purpose has been served by the naming of the others? Absolutely none! The same is true of the nearly 100 alleged species of sorghum, not to mention any other groups.

In addition to these purported species, there have been proposed an untold number of varieties each with its own little latin name. About 150 latin varietal names in Triticum alone are found in Koernicke and Werner (10) in 1885. That was nearly 40 years ago. The number has been increasing since at a very rapid rate, somewhat comparable to specific names for Crataegus in America. The situation would be bad enough if the forms thus designated by latin names were of approximately equal taxonomic value. This would be the case if they were wild forms. The cultivated forms so designated actually represent subspecies, varieties, subvarieties, forms and strains. What advantage does agronomy or horticulture derive from the attempt to foist a complex latin nomenclature on these cultivated forms? Absolutely none! Can the cultivated forms of plants be described, classified and keyed without a latin nomenclature? They can! It has been done, and well done, many times.

The classification of American wheat varieties by the writer and his associates (5) describes and keys about 230 agronomic varieties of wheat, arranged in the eight groups which so many writers have designated as species or subspecies. No latin names are used, except an occasional cross reference to the systems of European botanists, especially German. It was felt that these might make it easier for them to interpret the work. For American scientists the names were quite unnecessary. Similar work has been done by Etheridge (6) on oats and by Wiggins (14) on barley. W. W. Tracy, Jr. (12, 13) has classified the cultivated American varieties of lettuce and garden beans on a botanical basis without applying latin names to any categories. Many other cases could be cited here but are to be discussed in ^athe second paper of this series.

the writer⁹

It seems to ~~me~~ that systematic botany has failed to grasp three great opportunities presented to it. In the first place, it early pointed the finger of scorn at cultivated plants, and bade its followers shun them as a thing unclean. This attitude has set back the discriminating knowledge of the characters and relationships of our important domesticated plants for at least a century. Taxonomic botany has yet to learn that no higher ideal than service to humanity can be found even in science.

In the second place, botany might have been the gate-way through which countless thousands of common folk as well as students should enter into a knowledge of the beauty and the miracle of nature. Plants are everywhere. They appeal to the average man and woman more than do animals for a study of natural phenomena and, unlike most animals also, plants can be grown in or about the home. This cultivates sentimental relations, permits friendships, and opens avenues for interesting and profitable study. In fact, however, only a few horticultural plants are thus grown. The richness of any given flora, and the beauty and complexity of form and color which it affords, are things unknown to the average person, because his eyes never have been taught to see. Systematic botany as taught in most institutions must admit itself responsible for this unfortunate condition. It has introduced the student to the plant too often either as a latin name and a badly dried specimen, or through a laboratory study of some potentially interesting but poorly explained and unrelated microscopic fragments.

In the third place, systematic botany has failed to sell itself at its actual value to the scientific world. This is due in large part to an epidemic brain storm which many of its adherents had some 25 years ago, and which is comprehended in the phrase, priority in nomenclature. The whole idea rests on the false and, therefore, indefensible assumption that there is an obligation to discover and recognize the first namer of a botanical entity. This so-called law of priority is not a law but a fetish and an utterly foolish delusion. Plants were not made for names, but names for plants. Why should we attempt to enthrone the alleged supposed prior right of the first namer of a plant? Does any one care about the "rights" of the first coiner of a word, or the first suggestor of an unimportant idea, expressed in a mechanism long obsolete and forgotten? Why burden living workers and strangle science for the nebulous "rights" of those long dead? Have the living botanists no rights? Have the common people who use plants, and love them, no rights?

Systematic botany has sold her priceless birthright for less than pottage. She has gone into reverse, turned her eyes to the dead past, and given her vital energy to fitting gold bones out of ash heaps, while science starves. Life cannot be breathed into dead bones. As well try to hark back to the hoop-skirt and the bustle, or the horse-drawn buggy and the sailing ship. Progress is forward, not backward, except for crabs. Golden opportunity lies before us. The automobile brings all people to the outdoors. Recreation is the slogan and purpose of multitudes. Play grounds, gardens, parks and forest reserves multiply throughout the land. Will taxonomic botany accept the challenge? Will she teach the love of plants and a knowledge of their uses and the wonders of their form and structure to all comers? Will she try to reach the man in the street and the student in the college? Pray God she may. Let us arise and go forward.

U.S. Department of Agriculture,
Washington, D.C.

11

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See correspondence with:

Allen, C. E.
Coulter, J. M.
Cowles, Henry C.
Pieters, A. J.
Robinson, B. L.

The mss. was refused by all journals to which it was submitted.
W.A.Archer - June, 1962

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C. R. Ball

Thanks. This is not only
interesting and spicy but
contains sense & wisdom

A. J. Pieters

December 24, 1925.

Dr. J. M. Coulter,
Editor, Botanical Gazette,
University of Chicago,
Chicago, Illinois.

Dear Doctor Coulter:

I am transmitting herewith a little paper entitled "Why
Burden the Forms of Domesticated Plants with a Latin Nomenclature",
which seems to me is worth publishing in these days of increased
importance of crop plants and increasing attention to them
as well as more conservative opinions on the whole subject of
nomenclature.

With kind personal regards and best holiday wishes,

I am

Very sincerely yours,

Carleton R. Ball,
Senior Agronomist in Charge.

CRB/AJM

The University of Chicago

Department of Botany

January 18, 1926

Mr. Carleton R. Ball
U. S. Bureau of Plant Industry
Washington, D. C.

Dear Mr. Ball:

Several of us here have looked over the paper that you submitted for publication in the Gazette entitled "Why Burden the Forms of Domesticated Plants with Latin Nomenclature". All of us are very much in sympathy with the article and would like to see it published but we are wondering whether the Gazette is exactly the medium that you would like for such a paper. We have, as you know, a very specialized audience. I am inclined to think, and my colleagues agree with me, that publication in a journal like "Science" would be more what you desire.

Awaiting your pleasure in the matter, I am

Very sincerely yours,

Henry C. Cowles
HENRY C. COWLES

HCC:LB.

January 30, 1926.

Dr. Henry C. Cowles,
The University of Chicago,
Dept. of Botany,
Chicago, Illinois.

Dear Doctor Cowles:

Your letter of January 18 has been neglected, owing to the pressure of many other things, professional and personal. I note with interest your comment on the little paper I forwarded. If you and your editorial associates do not think it best to publish it in the Botanical Gazette, kindly send it back to me and I will refund the postage. I had in mind that the Gazette is a Journal of general botany, not excluding taxonomy and that, therefore, it would be a suitable medium for the expression of the included views.

With kind personal regards, I am

Very sincerely yours,

Carleton R. Ball,
Senior Agronomist in Charge.

CRB/AJM

The University of Chicago

Department of Botany

February 9, 1926

Mr. C. R. Ball
Bureau of Plant Industry
Washington, D. C.

Dear Ball:

It is with very great regret that I return to you your paper on "Why Burden the Forms of Domesticated Plants with a Latin Nomenclature?". The regret is because we should like very much to publish a paper written by you, since we have the highest regard for the character and quality of your work. Another occasion for regret is that we believe absolutely all that you say is true. We do not feel, however, that the Gazette is properly a medium for the publication of views but rather a medium for the publication of research. The Gazette would not give you the audience that you want, I fear.

It would seem to us that Science is the proper journal for the publication of your very desirable paper. We have no feeling against taxonomy or any other division of Botany; in fact, we have published and will continue to publish articles on taxonomy. These articles, we feel however, should be researches in the field of taxonomy and not merely the expressions of opinions. We may be wrong in our attitude but this is the feeling of our staff on the matter.

Again expressing my regret and also expressing the hope that you will submit to us in the not too distant future some of your best researches in taxonomy of wheat or other subjects, I am

Sincerely yours,

Henry C. Cowles

HENRY C. COWLES

HCC:LB.



Taxonomy

Bot 1507

February 13, 1926.

Dr. Henry C. Cowles,
The University of Chicago,
Dept. of Botany,
Chicago, Illinois.

Dear Doctor Cowles:

Your letter of February 9 is received, together with the copy of my paper and I note with much interest the views of yourself and your associates on publication of same. I am glad to meet an editorial board which has a definite policy and reasons for following it. I have been an editor myself long enough to appreciate the necessity of that plan.

Very sincerely yours,

Carleton R. Ball,
Senior Agronomist in Charge.

CRB/AJM

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF PLANT INDUSTRY

WASHINGTON

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FORAGE CROPS

January 17, 1928.

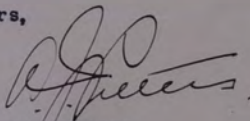
MEMORANDUM FOR DR. C. R. BALL.

Dear Dr. Ball:

I shall be glad to know whether you have ever given consideration to the problem of Latin names for varieties. You are aware, of course, that mammoth clover has been called Trifolium pratense perenne. On looking up the literature it appears to me quite evident that mammoth clover is not the same plant that was described by George Sinclair as Trifolium pratense perenne, and the question has been raised in my mind whether there is any object in trying to use the Latin name for a variety of a cultivated crop.

Another example would be Ladino white clover. This has been variously called Trifolium repens giganteum, Trifolium repens latum, and, I believe, other names have been applied to it. It is almost impossible and in some cases quite impossible to determine in accordance with the rules of botanical nomenclature, which particular name has precedence, and it has occurred to me that it would be much wiser if no Latin names were used at all to designate the varieties of cultivated plants. I discussed this informally at one time with Dr. Coville, and he agrees with this idea. Since there must be thousands of varieties of grains and corn, I shall be glad to have your view on this subject.

Very truly yours,

A. J. Pieters,
Agronomist,

Acting in Charge of Forage Crops.



January 21, 1928.

Dr. A. J. Pieters,
Agronomist, Acting in Charge
of Forage Crops.

Dear Dr. Pieters:

Your memorandum of January 17 duly received and really answered by my giving to you on Wednesday the copy of my paper read before the Systematic Section of the Botanical Society of America on December 3 of 1924. This I have just received from you again, with your interesting comment. My ideas on this subject not only have not changed, but have become intensified, if anything.

Very sincerely yours,

Carleton R. Ball,
Senior Agronomist in Charge.

CRB:RL

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
WASHINGTON

OFFICE OF CEREAL INVESTIGATIONS

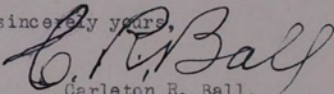
June 26, 1925.

Dr. B. L. Robinson, Editor-in-Chief,
Rhodora,
300 Massachusetts Avenue,
Boston, Mass.

Dear Doctor Robinson:

I am enclosing herewith a little paper entitled "Why Burden
the Forms of Domesticated Plants with a Latin Nomenclature?", and
will be interested to know if it is acceptable for publication in
Rhodora. If it is so found, I will wish some reprints when it
appears.

Very sincerely yours,


Carleton R. Ball,
Senior Agronomist in Charge.

CRB/AJM

ENC.

Gray Herbarium



Harvard University

B. L. ROBINSON, Curator

Mr. Carleton R. Ball,
Bureau of Plant Industry,
Washington, D. C.



CAMBRIDGE, MASSACHUSETTS, U.S.A.

Oct. 23, 1925.

Dear Mr. Ball,-

I am truly sorry that so long a time has passed before I could decide about that article which you were so kind as to send for consideration of *Rhodora*. It reached me when it was too late to get into touch with other members of the editorial board who were already widely scattered from Newfoundland to Panama.

Our little journal, as you know, was started with the very definite purpose of putting on record, so far as possible, facts and views relative to the flora of New England. Its issues are very limited, mostly 16 to 20 or at most 24 pages per month, consequently we have to be pretty careful how we take on other matter.

I have only just had an opportunity to talk your paper over with others of our editorial board, and find that we do not feel that it is quite appropriate to our needs or the scope of our journal.

Furthermore your paper is of a kind which would reach its proper clientele much more readily through the medium of some journal of wider scope, such as *Science* or the *American Journal of Botany*.

On examining your paper we have been much surprised that you should ~~argue~~^{argue} so earnestly for what seems to us to have been pretty well threshed out in the past. Of course in Article 30 of the International Rules for Botanical Nomenclature there is a very definite statement to the effect that forms of cultivated plants should receive names in common language

"as different as possible from the Latin names of the species and varieties". You will notice that this rule went even back to the DeCandollean Code of 1868, where it occurs in Article 40. It would seem, then, merely a matter of following the International Rules which have been very carefully drawn up and which may be regarded as the expressed wish of the majority of the botanists of the world. Of course no such rules can get the support of everybody and there will always be those who disregard the wishes of their colleagues.

Your suggestion that this matter of the naming of plants of cultivation should be cared for by the systematic botanists involves several difficulties. In the first place, systematic botanists are more than busy with their proper material, namely, plants in the state of nature. In the second place, the nomenclatorial needs of horticulture and agriculture are quite different from those in botany and subject to very different conditions. They must be adapted to commercial needs, temporary convenience and a variety of psychological conditions involved. Such a nomenclature can be worked out only by those actually engaged in work upon the cultivated plants and who are familiar with the conditions necessary.

I trust you will have no serious difficulty in placing your article in some journal of wider scope than *Rhodora* and thank you for your kindness in submitting it for our consideration.

Sincerely yours,

BLR/FMG

Inclosure

W. L. Johnson