

Freedman and Funk.<sup>15</sup> Whether we deal here with a new vitamine or with one of the already known ones, only the future study will decide. Summarizing the above the following classification is suggested:

VITAMINES	VITASTEROLS
Vitamine B, or the anti-beriberi vitamine.	Vitasterol A, or the anti-xerophthalmic vitasterol.
Vitamine C, or the anti-scorbutic vitamine.	Vitasterol E, or the anti-rachitic vitasterol.
Vitamine D, or the yeast-growth promoting vitamine.	Vitasterol F (?), or the reproduction vitasterol.
Vitamine P (?), or the antipellagra vitamine.	

It would seem that the general adoption of this provisional and unified classification would correct the chaos existing now in the literature and would in the same time meet many of the present justified criticisms. This proposed nomenclature will be suggested at the meeting of the International Union of Chemistry this year at Bucharest.

CASIMIR FUNK

STATE EPIDEMIOLOGICAL INSTITUTE  
WARSAW, POLAND

### THE POLITENESS OF AMERICAN BOTANISTS

DRS. ROSE and Stevens have found that American botanists are suffering from what they believe to be excessive politeness, and propose as a remedy the establishment of a new journal or two.<sup>1</sup>

The writer does not care to raise the issue as to whether American botanists are excessively polite or even moderately so; but granting the condition, the proposed cure could serve only to aggravate the situation. If botanical literature is suffering from a lack of criticism, the only possible means to correct this condition is to develop critics, not journals. However, in those branches of botanical science familiar to the writer there seems to be no tendency to follow the apparent practice of the phytopathologist, of indulging in critical remarks only "when neither the author of the paper nor the editor of the journal is present."

Although the established journals may not actively solicit criticisms, they seem willing enough to accept them for publication when offered. The truth of the matter is that the number of published articles has reached such a quantity that critical perusal is possible only for a few. Most botanists capable of of-

fering constructive criticism are engaged in original investigations and can pause only long enough to criticize the articles in their restricted field.

If general criticism is desired it must be undertaken in the botanical sciences, as in literature, by novices just breaking in or by professionals who lack the ability to produce. Such criticism doubtless will prove to be even more worthless in botany than in literature, but if the authors feel that this sort of thing really is valuable they need not await the establishment of a medium of publication—the field is clear.

J. H. KEMPTON

BUREAU OF PLANT INDUSTRY  
WASHINGTON, D. C.

In the preparation of their article on "The excessive politeness of American botanists" in *SCIENCE* of June 26, Rose and Stevens were doubtless activated by the motive of raising the standard of American botanical publications. While there can be no argument as to the worthiness of this motive, yet there may be some question as to the most effective *modus operandi*. Their view is that the best method is free criticism in print.

Obviously discussions on the floor of scientific meetings have great value in forcing the author to defend his thesis, and in suggesting new viewpoints and lines of attack; however, published criticisms unaccompanied by additional data may prove a deterrent to progress, if not, indeed, an actual menace to the advance of science. If papers which purport to be scientific are obviously worthless or superfluous, or display gross ignorance of previous work, they can scarcely be corrected by cluttering up the literature with public reprimands intended to demolish them. The way to correct or eliminate them is by a rigid editorial censorship. The responsibility for the two papers cited as disgraceful must be attributed as much to the oversight of the editors as to the ignorance of the authors.

On the other hand, there is a type of published scientific criticism which is far more worthy of encouragement than are mere expressions of contempt or accusations of misstatement. If a paper contains data which is open to question or misinterpretations, the errors can be corrected, not by a mere statement of doubt, but only by a repetition of the experiment, observation or analysis, perhaps with more refined methods. In fact almost all scientific progress consists in a criticism of previous work in the light of new discoveries. Such criticism is constructive and worthwhile. Modern scientific literature abounds in it, whether it be American, European or Asiatic. The most conspicuous recent example that has come

<sup>15</sup> Freedman and Funk, *J. Metab. Res.*, 1, 457, 469, 1922.

<sup>1</sup> Rose, D. H., and Stevens, Neil M., "The excessive politeness of American botanists," *SCIENCE*, N. S., Vol. lxi, No. 1591, pp. 656-657, June 26, 1925.

to my attention is the paper by Bessie Goldstein in the *Torrey Bulletin*, in which she shows that the reports of the occurrence of binucleated cells by Hutchinson and by Beer and Arber were due to the observation of cells with cell-plates in polar view.

A limited number of high-class criticisms written for the sole purpose of criticizing are undoubtedly beneficial. This applies especially to books and papers accepted for publication by non-scientific editors. But I for one do not feel the need of further burdening our already over-taxed publication facilities with fault and flaw finding Philippias which add nothing to the sum total of human knowledge. *Botanical Abstracts* supplies us with satisfactory reviews of all papers. Is it not well that *ex cathedra* critical effusions are giving place to the reinvestigation of critical problems?

CLIFFORD H. FARR

SHAW SCHOOL OF BOTANY,  
WASHINGTON UNIVERSITY

### EVOLUTION AND THE BIBLE

UNDER the above caption, Dr. Ira D. Cardiff, in *SCIENCE* of July 31, very properly points out that many of those who are coming forward to the defense of evolution are not scientists of any standing. Probably some of those defending the Biblical account of creation are not scholars of any standing. Debates will undoubtedly frequently be held by people of little or no training in either of the fields that they are discussing. Votes taken by audiences listening to such debates are nothing more than expressions of opinion on the efficiency of the individual debaters, but that is true of debates on practically all subjects, and there is in it no serious danger either for science or religion.

It is quite as foolish for a specialist in religion to attempt to criticize and to analyze scientific subjects with which he is not familiar as it is for a scientist to attempt to criticize and analyze religion or the Bible unless he is thoroughly familiar with the subject.

Many scientific men of good standing in their specialties are quite ignorant of closely related scientific fields, and grossly ignorant of the history and philosophy of religion. There are many others, however, who while they have become great specialists have also given as careful study to other unrelated fields. I happen to know quite a number of the scientists of high station referred to by Cardiff as having done harm to science by their statement that there is no conflict between science and religion, meaning presumably the Christian religion in its broadest sense. I think it may be fairly said that their statement represents the conviction of a very large number if not the majority of scientific men with whom in the past

thirty years I have had occasion to discuss this subject. There can be no conflict between truths in the two fields. No scientist will refuse to recognize truth wherever he finds it. I am glad the "scientists of high station" had the "moral courage" to make the statement they did.

Mr. Cardiff is doing the real harm to science by taking an unscientific attitude toward religion.

ALBERT F. WOODS

UNIVERSITY OF MARYLAND

I can not help thinking that Dr. Ira D. Cardiff, in his letter (*SCIENCE*, July 31, p. 111) on "Evolution and the Bible," is really quite off on the wrong track.

The first chapter of Genesis is not in the least "primitive Jewish folk lore"—though most of the second chapter pretty certainly is. But that "Elohism" first chapter, in its present form, is probably nearly as late as Aristotle's day, and, on the whole, fair Mediterranean science of its time. The weakness of the fundamentalist argument is that it reads into this by no means absurd account of creation various ideas that are not there at all. The way, then, to meet his demand that we shall "take the Bible literally" is to take him at his word and do precisely that. Do this—with a good dictionary—and it immediately appears, that although, naturally, Genesis I does not support "Darwinism," neither does it any more support the "Linnaeanism" which the anti-evolutionists read into it.

I do not happen to know how skillfully this Mr. Cantrell may have handled his case before an audience; but I do think he is pursuing a sound strategy. After all, the Bible does not support fundamentalism. Therefore, the way to beat the fundamentalist is to get him to read the Bible—which he rarely does, being too busy hunting up proof-texts.

E. T. BREWSTER

ANDOVER, MASS:

### SCIENTIFIC BOOKS

*History of the Beet (Beta) as a cultural Plant* (Geschichte der Rübe (Beta) als Kulturpflanze) from the oldest times until the publication of Achard's principal work (1809). An anniversary essay, in honor of the 75th year of the foundation of the "Verein der Deutschen Zuckerindustrie." By PROFESSOR DR. EDMUND O. VON LIPPMANN, Hon. Dr. Eng., Technical High School of Dresden and Director of the Halle Sugar Refinery in Halle, Germany. One illustration, 184 pages, 16 × 23½ cm. price bound 12 gold marks. Julius Springer, Berlin, 1925.

THE present volume is the third quatercentennial essay which has been issued by the "German Indus-