reader might not be confused by the differences in the language. This seems especially true with respect to articles which appear in standard works of reference which are supposed to be largely consulted by those who do not claim to be experts on the various subjects on which they seek some information.

It would obviously be puerile to aim to direct public attention to all the definite errors which one may observe in the literature, but blemishes in works which are widely regarded as authoritative like the "Encyclopaedia Britannica" and which are frequently revised deserve wide publicity in order that their harmfulness may be mitigated and that the public may remain duly watchful as regards shortcomings. The careful study of errors is sometimes an attractive method for securing a clear insight into a subject. It may be added that by consulting the article under the entry "Quaternions" in the encyclopedia in question it will be seen that this encyclopedia is not entirely consistent with respect to the number of commutative and associative laws of operation in mathematics.

G. A. MILLER

UNIVERSITY OF ILLINOIS

STABILITY IN NOMENCLATURE

MANY plant taxonomists, in recent years, have contemplated the idea of a new series of beginning dates for botanical nomenclature; one of the latest of these proposals to appear in print is that of Wheeler.[1] The author of this proposal suggests that a series of uniform monographs should be executed with strict regard for the rules of botanical nomenclature and the type concept and thereafter accepted as a new starting date for the nomenclature of the group treated. Such a procedure, it is hoped, would produce stability in nomenclature and eliminate the present accumulation of useless synonymy.

That any international congress will seriously consider adopting such a proposal is extremely unlikely, but before the matter goes beyond its present nebulous stage it may be well to discuss the desirability of any such change in our present system, which accepts the publication of Linnaeus' "Species Plantarum" in 1753 as a beginning date for nomenclature of the higher plants. It is the opinion of the present writer that any such change in our system would increase, rather than reduce, the present confusion.

The most obvious objection to the proposed change is its utter impracticability. What "international body of systematists" is capable of passing judgment upon any modern monograph? In theory, at least, the author of such a monograph is the sole person capable of judging it; if his conclusions are to be questioned, such questioning can be done only by another monographer who has spent at least as much time and effort upon the group as the original author. Therefore, before any monograph is acceptable to the appointed committee on approval, the committee must go over the original sources available to the monographer. As these sources are diverse, comprising exhaustive herbarium, field and library study, the committee would in each case have to prepare its own monograph in order to be sure that the original was acceptable. And even after the second monograph had been finished, what sincere student would accept its conclusions without himself checking the sources of information?

But let us suppose that a monograph is approved by an international group of systematists whose approval is accepted as the final word. Now it becomes unnecessary for future students to examine the earlier literature of the group, at least in so far as nomenclature is concerned. The synonymy in the group has become frozen; all names thrown into synonymy by the monographer become essentially outlawed. This, in effect, is precisely what happens under our present system when a monograph obtains universal recognition. The casual student, who suspects that he has a new species, does not go further back than the best available monograph, and this casual student is not to be affected by the proposed change in the system. It is the future monographer who will find himself at a loss. In view of the more abundant material available to him than to the original monographer, or as a result of improved criteria, he may decide that a dozen species were lumped as one by his predecessor. Shall he give his own names to eleven of them, even if they all have earlier and outlawed names? In cases of changes in generic concept (and such concepts are certain to change from time to time) our future monographer will find himself in even more of a moral dilemma.

Wheeler admits that "there are many problems to solve before any plan for a new beginning date can be put into operation, but *now* is the time to begin." I question whether such a beginning should ever be made. What is fundamentally wrong with our present system? It is no hardship to the careful monographer to examine all previous work on his group and pass judgment upon it; in fact, any monographer worthy of the name will continue to do this in spite of legislation. It is no hardship to the casual student, who need not go beyond the best available monograph for his facts. If the next international congress wishes to appoint a committee to list the best available monographs in each group, such a list would certainly be useful, but in the opinion of the writer it should never, at whatever distant time, be legislated into a formal beginning date.

Perhaps the writer is too optimistic in believing that the present confusion in nomenclature will be decreased without legislation. But it seems to him that the situation is becoming clarified with every careful mono-

[1] L. C. Wheeler, *Am. Jour. Bot.*, 26. Suppl.: 25s. 1939.

graph. The classification of plants is a young field of human endeavor; if stability has not been achieved in the few years since 1753, that is no reason to legislate stability at the sacrifice of accuracy. That we have accepted 1753 as a beginning date (instead of Adam, as at least one of our number has proposed) is sufficient of a compromise. Would it not be well to let the present system have a fair trial, let us say another thousand years?

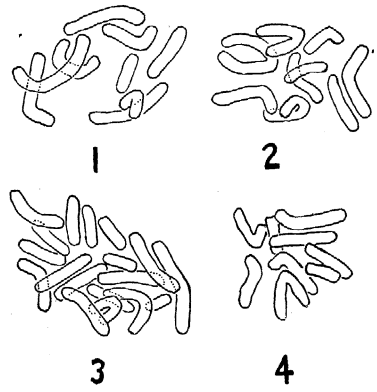
A. C. SMITH

NEW YORK BOTANICAL GARDEN

ANEUPLOIDY IN A HEPATIC SPECIES

INTRA-SPECIFIC aneuploidy in the Hepaticae has been reported by Haupt[1] in *Marchantia* species. The plants studied were hyperhaploids having one or more supernumerary chromosomes.

The chromosome number for the anacrogynous hepatic *Pallavicinia Lyellii* (Hook.) S. F. Gray has been established as n = 8, 2n = 16 by Moore,[2] Tatuno,[3] and Wolcott.[4] Male and female gametophytes of *P. Lyellii* collected near Milano, Texas, have recently been investigated. These plants have 9 chromosomes (Figs. 1, 2). Developing sporophytes from the same location



FIGS. 1–4. Metaphase chromosomes of *Pallavicinia Lyellii*. FIG. 1. From developing calyptra, female. FIG. 2. From growing tip of male thallus. FIG. 3. From developing sporophyte. FIG. 4. From growing tip of sexually undifferentiated thallus. FIGS. 1–3. Material from Milano, Texas. FIG. 4. Material from Wilmington, N. C. All material was fixed in Carnoy's fluid and smeared in aceto-carmine. All figures 1380 ×, made with the aid of a camera lucida.

possess 18 chromosomes (Fig. 3). A haploid count of 9 was also made in sexually undifferentiated thalli from Wilmington, North Carolina (Fig. 4). These two clones are then hyper-haploid. In the Texas material further investigations are being made to identify the extra chromosome.

An explanation of the origin of the aneuploid forms of *P. Lyellii* may be found in nuclear behavior during meiosis and spore formation. Since the aneuploid races were found during the past summer and meiosis takes place in *Pallavicinia* in March, no such investigation has been possible in aneuploids. However, in *P. Lyellii* (n = 8, 2n = 16) from Charlottesville, Virginia irregular meiosis is present as evidenced by occasional chromatin bridges during anaphase I and an uneven distribution of the chromosomes during telophase II. Following spore formation restitution nuclei and fragmented nuclei are seen. These observations (unpublished data) indicate the possibility of the formation of spores with aberrant chromosome numbers.

G. B. WOLCOTT

SOUTHWESTERN UNIVERSITY, TEXAS

EATING OF BONE BY THE PREGNANT AND LACTATING GRAY SQUIRREL

SINCE October, 1939, I have observed almost daily a group of five gray squirrels in my city back yard. A pair of them made a nest and wintered in one of the trees in the yard. I and neighbors feed them peanuts, various varieties of nuts and acorns. When the female became pregnant in the spring she began to eat, daily, old dried bone, some of the bones having been in the soil for from one to three years, and hence had lost all or nearly all animal flavor. At no time before the pregnancy did I observe this female eating bone. The males and the younger non-pregnant females have not been observed eating bones. This looks like a special "urge" or appetite for calcium and phosphorus during pregnancy and lactation in this species. But, of course, this is not established by this isolated observation. I should like to know whether others have noted this phenomena in the gray squirrel or related species, especially where these animals are kept in captivity.

There is evidence that some of the lower mammals and birds have some type of physiologic guide to an adequate diet, a guide or urge not clearly present in the human species, at least not in the adults. The pregnant or lactating mammal needs more calcium and phosphorus than the non-pregnant. But how is that need expressed in the animal's nervous system so that it leads to eating dried bones? There is abundant evidence of pregnancy inducing variations or fickleness of the appetite in the human species. But I know of no evidence of the appearance of a conscious urge (as distinct from knowledge) for the ingestion of more of the bone-forming salts during pregnancy and lactation.

A. J. CARLSON

UNIVERSITY OF CHICAGO

[1] Gertraud Haupt, *Zeits. Indukt. Abstamm.-Vererbungsl.*, 62: 367–428, 1933.

[2] A. C. Moore, *Bot. Gaz.*, 36: 384–388, 1903.

[3] S. Tatuno, *Jour. Sci. Hiroshima Univ. Ser. B*, Div. 2, 3: 1–9, 1936.

[4] G. B. Wolcott, *Amer. Jour. Bot.*, 24: 30–33, 1937.