P. CRISPUS L. Hodgson (*l. c.*) considers this "a very common and widely diffused species," and correctly, but it is certainly not so in the larger lakes. The form which has been named var. *serratus* Hudson, occurs occasionally both in Esthwaite Water and Hawes Water (69 *a*), but is uncommon or absent elsewhere in the lakes.

P. pectinatus L. has been recorded (Fl. Cumb. 318) for Bassenthwaite—probably in error. At any rate, we have not seen it there nor in any other lake up to the present. It is abundant in muddy calcareous tarns near the sea (*e. g.* Urswick Tarn, v.-c. 69 *b*) and in the Cavendish Dock and Ormsgill Reservoir at Barrow.

We have considered it advisable to confine the records given herewith to those of which we have personal knowledge, and have only cited others when they are admittedly incorrect or we are unable to confirm them. Owing to the immense area to be surveyed, and the fact that many of the species are entirely submerged, it may well happen that the list is not exhaustive. However, we have been engaged during the past 15 years in systematically examining the aquatic vegetation of the lakes, and during the past 3 years have visited some of them monthly, and all of them several times in the year. We feel, therefore, that the list may be accepted as a fair representation of the distribution of the various species of *Potamogeton* in the English Lakes at the date of publication.

THE TYPE-SPECIES OF PTERIS.

By William R. Maxon.

Several contributions to the pages of this Journal of late have served to focus attention sharply upon certain features of the present International Rules of Botanical Nomenclature that many writers (both British and American) look upon as objectionable, and to forecast eventual changes in the rules in several important respects, notably in the typification of genera by a definite "method of types." There is, obviously, general desire for an agreement in which all may unite. On the American side this is due in part to a strong drift away from the rigid provisions of the so-called American Code of 1907, and may be credited largely to the efforts of the "Committee on Nomenclature" of the Botanical Society of America, summarized in their two reports of 1919 and 1921 (*Science*, n. s. xlix. pp. 333–336; liii. pp. 312–314). "First species" rules and the like having failed from very arbitrariness, wide modification in the mechanism of applying the method of types is now urged. It has even seemed necessary to the committee to affirm that "rules of nomenclature should commend themselves as being reasonable," and that "they should be as definite as is consistent with reasonableness." However axiomatic, this appears not to have been written in a vein of conscious irony. At any rate, the recent effort has clearly gained support for the type-basis idea in generic nomenclature, and it is coming to be recognized very generally that this concept is not at odds with the principles of the International Rules. To a great majority of American

botanists the universal adoption of the method-of-types principle itself seems the important thing, whatever rules may eventually be agreed upon for its application. The departures of the newly proposed Type-basis Code from the code of 1907 are all in the direction of reasonable elasticity, so that in the case of composite genera that have repeatedly to be subdivided, it will be possible to fix upon type-species in closer accordance with the demands of historic usage. This will mean doing away with many substitute generic names, often obscure, that have been brought forward for old and well-known ones in recent years. The case of the genus *Pteris* of Linnæus (1753) is an excellent one in point.

As is very well known, the name *Pteris* is usually applied to a world-wide assemblage of perhaps 150 pteridoid species having a single indusium, and the name *Pteridium* to the segregate genus of a few species with double indusia, with *P. aquilinum* as type. However, in several recent American floras (Rydberg, *Flora of the Rocky Mountains*, 1917; Small, *Ferns of Tropical Florida*, 1918; Britton, *Flora of Bermuda*, 1918), the name *Pteris* is used for *P. aquilina* and its allies, the species of *Pteris* in the usual sense being placed in *Pycnodoria* Presl, a genus founded upon a single East Indian species in 1851, and up to the present time never before taken out of the synonymy of *Pteris* itself. The confusion to be caused by the proposed retypification of *Pteris*, including the sweeping changes involved in the eventual renaming of its very numerous species, can be borne if the change is known to be necessary, but it cannot be justified if based solely upon a relentless interpretation of some minor code technicality. Evidently the technical requirement is judged to exist, under the code of 1907; but a review of the facts shows that this basis is slight, and that the suggested change is unnecessary as well as unreasonable. The more important facts may be summarized as follows:—

Under the American Code (1907), *Pteris* as a Linnean genus would be typified through citations given in the fifth edition of the *Genera Plantarum* (1754). Since there are, however, no citations under *Pteris* in that work, it is necessary to typify the genus either with reference to citations given in the earlier editions of the Genera or by an analysis of the elements comprising Linnæus's concept of *Pteris* in the *Species Plantarum*.

In the *Species Plantarum* (1753) the species of "*Pteris*" are arranged in three groups. The first, "*Frondibus simplicissimis*," consists of four species now referred to the genera *Paltonium*, *Vittaria*, and *Eschatogramme*; the second, "*Frondibus simpliciter pinnatis*," etc., consists of seven species now referred to *Pteris* (5), *Notholæna* (1), and *Gymnopteris* (1); the third, "*Frondibus subbipinnatis seu ramosis*," consists of eight species, now placed in *Doryopteris* (1), *Pteridium* (2), *Pteris* (3), *Pellæa* (1), and *Gleichenia* (1). The total of 19 species, therefore, represents 10 genera belonging to two families of ferns. Of these, no fewer than eight species belong to *Pteris* in the historic and usual sense. None of the species is of pronounced economic importance. Sixteen of the 19 are altogether American, two are Chinese, and only one (viz.,

no. 13, *P. aquilina*) is European. *Pteris aquilina* was, it must be admitted, the only included species indigenous from the standpoint of the author, but it was a very minor element in the original assemblage of species, and it ought not now to be selected casually as the type of the genus, particularly in view of the subsequent historical facts. These are, that the *aquilina* element was segregated as a new genus, *Pteridium*, by Scopoli in 1760; that this genus has for many years past been recognized as valid, and under this name; and that the main body of "*Pteris*" species have been consistently retained in *Pteris* by most fern writers. There is nothing to show that *P. aquilina* played any special part in forming the generic concept of Linnæus. Moreover, it is evident that other of the included species were known to him in a living condition. Thus of the 19 "*Pteris*" species of the *Species Plantarum* six carry citatations to "*Pteris*" species of the Hortus Cliffortianus. Of the six, the first two are *Pteris grandifolia* and *P. longifolia*; the third is *Notholæna trichomanoides*; the fourth is *Doryopteris pedata*; the fifth and sixth are *Pteridium aquilinum* and *P. caudatum* respectively. Five of the six are American, and these were presumably known to Linnæus from living cultivated plants.

Recapitulating briefly: Of the 19 species of *Pteris* in the *Species Plantarum* eight, or nearly one-half, belong to *Pteris* as commonly understood, while no other genus has more than two. This preponderance, coupled with historic usage, should be sufficient ground for retaining the application of *Pteris* in the usual sense. Furthermore, of the eight species two (*P. grandifolia* and *P. longifolia*) were presumably known to Linnæus in a living condition. The selection of *P. longifolia* as the type of *Pteris* in accordance with tacit practice is quite as justifiable as the choice of *P. aquilina* under the former code provision that stipulates for the selection of an indigenous species.

Typification of *Pteris* through the *Genera Plantarum* leads to a similar conclusion. As above mentioned, there are no citations under *Pteris* in the fifth edition (1754). The first edition (1737) contains what is, apparently, the first generic use of *Pteris* by Linnæus. The brief diagnosis—"Fructificationes in lineam, subtus cingentem marginem folii, digestæ"—is accompanied by a brief reference to "Malp. 30" and by citation of 13 plates of Plumier's American ferns. The Malpighi reference is presumably to plate 51, figure 300 (not fig. 30), of *Anatome Plantarum* (1675), representing a small conventionalized drawing of a fern segment, doubtless *Pteridium aquilinum*, which is discussed briefly by Malpighi as *Filix* (page 72). The 13 Plumier plates cited are all American, and pertain to at least six genera; six belong to *Pteris*, and one to *Pteridium*.

With a single typographical change, an identical entry occurs in the second, third, and fourth editions of the *Genera* in 1742, 1743, and 1752, respectively. There is nothing to show that Linnæus's concept had undergone any change at the time the fifth edition appeared, 1754.

Typifying the genus on the basis of the first four editions of the *Genera Plantarum*, therefore, it is seen that the basis of *Pteris* is

overwhelmingly American, and that while six genera are represented among the American species illustrated, *Pteris* (in the usual sense) has almost a majority,—six species. The claims of these six species as typical are about equal. Here, again, historical usage may properly be considered and a free-veined species selected, since the netted-veined species are commonly placed in separated sections under distinctive names. *P. longifolia* is a reasonable selection, and this is, in fact, the type indicated by Christensen in the *Index Filicum*.

An examination of the Linnean literature thus shows that *Pteris* of Linnæus can be typified by *P. aquilina* only by recourse to a rule that an oldest known or indigenous species *must* be selected as type. In the present instance this would result in excluding from consideration the largest numerical element of the originally included species, namely *P. longifolia* and allied species, known as *Pteris* for more than a century. There appears to be no warrant for this, other than the *mandatory* provision of a rule whose basic idea is essentially sound. To such a course the liberal spirit of the new Type-basis Code is directly opposed.

But assuming that the claims of the name *Pteris* to use in its traditional sense could not be clearly shown, it is still almost certain that it would never be replaced in common usage; nor, in the writer's opinion, should it ever be displaced. Under the type-basis or any other code or set of rules, it is evident, many important genera can retain their usual names only by special exception, and there need be no more than passing regret over the necessity for a list of *nomina conservanda*. The principle of "saved" names is logically correct, and is quite defensible on grounds of expediency alone. Such a list, to receive general support, must naturally be subject to revision and be restricted to those genera that, because of their economic importance, numerous species, or involved nomenclatural history, have legitimate claims to being taken up under their best known names. If properly compiled, with a brief analysis of each case, a carefully considered list would do away with a vast amount of detailed discussion aimed at saving wellknown generic names "by rule," and would make appreciably easier the study of plants themselves. In spite of harsh judgements often levelled at systematic botanists, this, rather than the shuffling of names, is still their chief concern.

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DR. STIRTON'S NEW BRITISH MOSSES REVISED.

By H. N. Dixon, M.A., F.L.S.

The late Dr. James Stirton from time to time published papers, ranging from 1870 to 1915, dealing with British mosses, in the course of which he described numerous new species, reaching the considerable number of over 110; that is to say, an addition of nearly 20 per cent. to the usually recognized total of British mosses. During Dr. Stirton's lifetime very little opportunity was offered for examining these species, but since his death his herbarium of mosses has come into the possession of the British Museum (Nat. Hist.), and it has been possible to