Polemonium glabrum may be distinguished readily from any other naturally occurring *Polemonium* by the shape and size of the corolla, and by its glabrous calyx. The only other record of a similar corolla is found in the report by Ostenfeld (Genetic studies in *Polemonium,* Hereditas 12: 31–39. 1929.) of crosses between *P. mexicanum* Cerv. ex Lag. and *P. pauciflorum* S. Wats. The affinities of the present species may well be with the above, but neither *P. mexicanum* nor *P. pauciflorum* have been reported from the vicinity of *P. glabrum.* The probability of *P. glabrum* being merely a hybrid (*P. mexicanum* × *pauciflorum*) was considered and discounted because of the absence of the putative parents and because of its constant pollen size. The pollen of known hybrids has been found by the author to show irregularities in size, whereas the pollen of *P. glabrum* is perfectly normal. Also there is apparently no reduction in the number of seeds set, as might be expected in the case of a hybrid plant.

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NOTES ON THE TAXONOMY OF SOME EASTERN ASIATIC FERNS OF THE GENERA PROTOWOODSIA AND PTERETIS

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While glancing over a recent paper of Dr. R. C. Ching (1945, p. 36) and a review of the same paper in Biological Abstracts (1946), the author noticed the generic name *Protowoodsia* being used for a new genus of ferns. Since he was familiar with this name as early as 1941, verifying the validity of the name seemed necessary. In checking over his notes, the author found the following sequence of circumstances.

In 1940 Dr. Ching (p. 245) used the generic name *Protowoodsia,* listing under it "*P. manchuriensis* (Hook.) Ching. A monotypic genus confined to N. E. Asia." The only description of the genus is to be found in his description of the new family Woodsiaceae, as "spores bilateral, dark-colored, with perispores, or tetraedral, smooth and translucent (*Protowoodsia*)." Concluding his description of the Woodsiaceae, Ching remarks that this is "a very small family of two genera and about forty species; its affinities with *Cyathea* and the next two families has generally been recognized."

The manner in which the name *Protowoodsia* appeared in Ching's paper led the author to believe that the generic name had been validly published elsewhere. Therefore, in his doctorate thesis in 1942 (p. 73), the author used the generic name as follows: "*Protowoodsia* Ching has translucent, smooth, subglobose to bilateral spores lacking an exospore (*P. manchurien-*

sis)." After studying the spores of specimens of *Woodsia manchuriensis* from Japan and Korea (from herbarium sheets at the Gray Herbarium), I am unable to verify the "tetraedral" spores Ching had described *Protowoodsia* as possessing.

In 1945 Ching (p. 36) published the genus *Protowoodsia* properly, accompanied with a Latin description and with citations of the specific transfers. The following is Dr. Ching's description as originally written:

"Protowoodsia, gen. nov. Genus *Woodsiae* § *Euwoodsia,* habitu, configuratione et stipite continuo similis, differt praecipue folia utraque nuda, pilis articulatis et paleis brunneis linearibus desunt, indusiis inferioribus globosis griseo-membranaceis, satis magnis, apice ore rotundata contracto dehiscentibus, spores tetraedricae, translucentibus, laevibus.

Species unica in Asia boreali-orientalis incola."

Again, Dr. Ching describes the spores as being "tetraedral" in shape. However, the apparently invalid use of the combination *Protowoodsia manchuriensis* (Hook.) Ching, as well as of the generic name, in the Sunyatsenia publication are totally ignored in the later publication. Obviously, the earlier publication was a prepublication.

The spores in the specimens studied by the author are subglobose, totally lacking any trace of the triradiating crest so prevalent in tetrahedral spores. They are definitely monolete, subglobose to ellipsoidal in shape and light brown in color, lacking an exospore, and therefore appearing smooth. Dr. Ching called the loose outer covering of the spores the perispore; I have designated it as the exospore. The perispore, which is the outer spore-wall, in the case of *Woodsia manchuriensis* has a few broad pits, but is otherwise smooth.

While studying the annular cells of the sporangia of various species of the genus *Woodsia,* I observed that the range of variability in the number of cells in the annulus is confined to groups of species. In Table 1 are given some of the species studied, the locality of the specimens, and the number of cells in the annuli.

Judging from the range in the number of cells in the annulus in *P. manchuriensis* (10–13), it belongs by itself. The spores and the indusium also bear out isolating this species, probably in the new genus *Protowoodsia,* as proposed by Ching, with an emendation in regard to the spore characters.

Protowoodsia Ching, Sunyatsenia 5(4): 245 (nomen subnud.). 1940; Lingnan Sci. Jour. 21: 36. 1945.

Protowoodsia manchuriensis (Hook.) Ching, Sunyatsenia 5(4): 245 (nomen subnud.). 1940; Reed, Thesis, Harvard Univ., p. 73. 1942 (ined.); Ching, Lingnan Sci. Jour. 21: 36. 1945.

Syn.: *Woodsia* (*Physematium*) *manchuriensis* Hook., 2nd. Cent.

Ferns, pl. 98. 1861; *Diacalpe manchuriensis* Trev., Nuov. Giorn. Bot. Ital. 7: 160. 1875; *Physematium manchuriense* Nakai, Bot. Mag. Tokyo 39: 176. 1925; *Woodsia insularis* Hance, Ann. Sci. Nat. IV. 15: 228. 1861 (non sensu Baker, in Hook., Syn. Fil. ed. 2, 47. 1874).

Distribution: North China, Korea and northern part of Japan.

Another case of "prepublication" in these papers of Dr. Ching (1940, p. 224) is the combination *Pteretis intermedia* in the de-

Table 1. Summary of the Cell Number in the Annulus.

Species	Locality	Number of cells in annulus
Woodsia lanosa	Kansu	26, 27, 28, 27, 27, 26, 28.
W. glabella	Newfoundland	23, 25, 26, 23, 21, 22, 25, 21.
W. glabella	Spitzbergen	19, 17, 19, 21, 17.
W. macrospora	Kansu	24, 23, 22, 23, 23, 23.
W. elongata	Kumaon	21, 24, 23.
W. oregana	Quebec	24, 18, 18, 20, 20, 23, 17, 18, 21.
W. cathcartiana	Michigan	20, 21, 23, 21, 18, 17, 18, 23.
W. ilvensis	Newfoundland	20, 21, 26, 20, 21, 21, 21, 22, 21.
W. alpina	New Brunswick	20, 18, 15, 18, 16, 17.
W. fragilis	Caucasus	18, 18, 20, 18, 19, 18, 18.
W. polystichoides	Manchuria	20, 17, 19, 18, 19, 17, 18.
W. subcordata	Manchuria	17, 17, 17, 17, 17.
W. peruviana	Peru	18, 17, 18, 18, 18.
W. crenata	Bolivia	18, 18, 16, 17, 17, 16.
W. montevidensis	Brazil	17, 16, 17, 17.
W. mexicana	New Mexico	15, 17, 16, 17, 16, 18, 17, 18.
W. Plummerae	Arizona	14, 15, 14, 15, 16, 15.
W. mollis	Mexico	15, 14, 14.
W. scopulina	South Dakota	15, 15, 16, 16, 15, 16.
W. obtusa	Maryland	14, 14, 15, 15, 14, 14, 17, 16.
Protowoodsia manchuriensis	Japan & Korea	12, 12, 10, 12, 10, 12, 13, 12.

scription of the new family Onocleaceae. In describing the family there appears the following passage: " . . . sori superficial, dorsal on the veins, globose, borne on cylindrical or convex receptacle and provided with white, membranaceous, fugaceous inferior, shell-shaped or globose indusium (lacking in *Pt. intermedia*). . . ." Ching only recognized two genera in the family, saying nothing of the genus *Pentarhizidium* of Hayata (1927, p. 716 and 1928, p. 345). However, at this place Ching does not cite the author of the specific epithet *intermedia*.

In his thesis again the present author (1942, p. 70) recognized three genera as follows, based on spore characters: "In *Onoclea* L. there are from thirty to thirty-two cells in the annulus. The spores (*O. sensibilis*) are green, large, bilateral, with a large loose punctate exospore. In *Pentarhizidium* Hayata the spores are similarly green, large, bilateral, with a very large loose punctate exospore (*P. orientale*). The annulus has from thirty-three to thirty-four cells.

In *Pteretis* Raf. (*Matteuccia* Todaro) the spores are brownish, with a smooth exospore, about one-half the size of those in *Onoclea* and *Pentarhizidium* and of entirely different structure. There are only twenty to twenty-seven cells in the annulus."

In 1945 Dr. Ching (p. 36) makes the new combinations *Pteretis japonica* (Hay.), *Pteretis intermedia* (C. Chr.) and *Pteretis orientalis* (Hook.), citing the proper synonyms for the specific epithets. Ching has taken the three species Hayata had placed in *Pentarhizidium* and transferred them to *Pteretis,* thus reducing the former genus to *Pteretis.*

The sori in *Pteretis* are medial and biserial, protected by a marginal lobe; in *Pentarhizidium* the sori are intramarginal and uniserial, protected by the continuous dark-brown leaf-margin. The spores of these two genera differ as stated above. The number of cells in the annulus is quite significant: *Pentarhizidium* having thirty-three to thirty-four cells with four to seven stomium-cells besides; *Pteretis* having twenty to twenty-seven rarely thirty, cells with four to six stomium-cells. These are probably distinct genera.

Pteretis Raf., Amer. Monthly Mag. Crit. Rev. 2: 268. 1818; Nieuwland, Amer. Midl. Nat. 3: 197. 1914; 4: 334. 1915; C. Chr., Ind. Fil. Suppl. 2: 30. 1917; Small, Ferns Vicinity of New York, 140–143, fig. 1935; Mattfeld, Repert. Sp. Nov. Fedde 44: 289. 1938; Merrill, Amer. Fern Jour. 33: 55–56. 1943.

Syn.: *Onoclea* Hoffm., Deutsch. Fl. 2: 11. 1795 (*partim*); Michx., Fl. Bor. Amer. 2: 272. 1803; Hook., Sp. Fil. 4: 161. 1862; Hook. et Bak., Syn. Fil. 46. 1866; *Struthiopteris* Willd., Mag. Ges. Nat. Fr. Berlin 3: 160. 1809 (*non Struthiopteris* Weis, 1770 *nec Struthopteris* Bernh., 1801); *Pterilis* Raf., Amer. Monthly Mag. Crit. Rev. 4: 195. 1819; *Pterinodes* Kuntze, Rev. Gen. Pl. 2: 819. 1891 (*partim*); *Matteuccia* Todaro, Syn. Pl. Acot. Vasc. Sicilia, 30. 1866.

This genus contains the European species *Pteretis Struthiopteris* (L.) Nieuwl. (Amer. Midl. Nat. 3: 197. 1914) and the American species *Pteretis nodulosa* (Michx.) Nieuwl. [Amer. Midl. Nat. 4: 334. 1916 (1915)].

Pentarhizidium Hayata, Bot. Mag. Tokyo 41: 715–716. 1927; 42: 345. 1928.

Pentarhizidium intermedium (C. Chr.) Hayata, Bot. Mag. Tokyo 41: 715. 1927; 42: 346. 1928.

Syn.: *Matteuccia intermedia* C. Chr., Bot. Gaz. 56: 337. 1913; *Pteretis intermedia* (C. Chr.) Ching, Sunyatsenia 5(4): 224 (nomen nudum). 1940; Reed, Thesis, Harvard Univ., p. 70. 1942 (ined.); Ching, Lingnan Sci. Jour. 21: 36. 1945.

Distribution: China (Shensi and N.W. Yunnan), India (Sikkim).

Pentarhizidium japonicum Hayata, Bot. Mag. Tokyo 42: 345. 1928.

Syn.: *Matteuccia japonica* (Hayata) C. Chr., Ind. Fil. Suppl. 3:

127. 1934; *Pteretis japonica* (Hayata) Ching, Lingnan Sci. Jour. 21: 36. 1945.

Distribution: Japan.

PENTARHIZIDIUM ORIENTALE (Hook.) Hayata, Bot. Mag. Tokyo 41: 715–716. 1927; 42: 345. 1928.

Syn.: *Struthiopteris orientalis* Hook., 2nd. Cent. Ferns, pl. 4. 1860; *Onoclea orientalis* Hook., Sp. Fil. 4: 161. 1862; Syn. Fil. 46. 1867; *Matteuccia orientale* (Hook.) Trev., Atti Ist. Veneto III. 18: 586. 1869; C. Chr., Ind. Fil. 420. 1906; *Pteretis orientalis* (Hook.) Ching, Lingnan Sci. Jour. 21: 36. 1945.

Distribution: Temperate China, East Himalayas and Japan.

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REVIEW

A study of the genus Paeonia. By F. C. STERN. London, Royal Horticultural Society. viii + 155 pp., 15 colored plates, 28 text figures, 8 maps. 1946. 63s.

There is probably no group of non-professional botanists to whom plant science owes a greater debt than the botanical and horticultural enthusiasts of Great Britain. Their energy in gathering together collections of both specimens and living plants from all corners of the earth, their care in raising a great variety of rare, exotic, and "difficult" species in their gardens, and their generosity in financing the explorations and research studies of their friends in the professional field of botany has widened immensely our knowledge of the world's flora. And their standards of execution have been consistently high, both as to the accuracy of the research and the elegance of the publication. Consequently it is more of a pleasure than a surprise to learn that during Britain's "darkest hour" of the last war there was being prepared a botanical work which is not only a fitting successor to