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## HEINRICH WILHELM SCHOTT

(1794-1865)

Harald Riedl (Wien)

H. W. Schott, well known as the foremost student of the Araceae around the middle of the last century, was born on January 7th, 1794 in Brno, Moravia. He soon came to Vienna, where his father was appointed chief gardener of the botanical garden of the university. J. N. and F. J. v. Jacquin directed the early interest of the boy in the study of plants, and especially a visit of A. v. Humboldt during a severe illness was one of the major impressions of his youth. He attended lectures in botany and some other disciplines connected with it at the university, but his first employment was as an assistant gardener under the direction of his father. Personal acquaintance with the most outstanding botanists of Vienna in those days, such as Host, Trattinick and Portenschlag, much advanced the young man's knowledge of indigenous as well as of foreign plants. In 1815 he became gardener at the garden for the Austrian flora at the Belvedere palace.

The most important event for all his future life was F. J. v. Jacquin's proposal that Schott should go as gardener on a scientific expedition to Brazil together with the botanist Mikan, the zoologist Natterer and the mineralogist Pohl. The expedition left Trieste on April 9th, 1817. In 1822 Schott's diary was published by K. v. Schreiber in Brno; in this he tells about the work and travels he took part in, and also a lot of details about the natural history, agriculture and ethnology of Brazil. In Rio de Janeiro a garden for accustoming living plants to more temperate climates in order to have them brought to Europe at a later date was founded and directed by Schott. He also made important botanical and zoological collections with many notes useful for further scientific investigation. In 1821 Schott returned to Vienna, where he took up gardening once again. Parts of the famous Schönbrunn gardens of Vienna were arranged in a new way under his direction, mainly following the English style which he much preferred to the more artificial French one of the original design. In 1845 he was made director of the botanical as well as of the zoological gardens of Schönbrunn, in which position he died on March 5th, 1865. His work remains alive not only as that of one of the more important plant taxonomists of the last century, but also as that of one of the most successful flori-culturists, who introduced a large number of new decorative plants grown to this day all over the world, such as *Anthurium Scherzerianum* and *Aglaonema pictum*.

The series of Schott's larger publications begins with the "Meletemata Botanica" in cooperation with St. Endlicher in 1832 and has its climax in the "Prodromus systematis Aroidearum" of 1860. More and more his interest was focussed on the Araceae, to which family he dedicated most both of his larger and of his more aphoristic short publications in various journals. Early work was also concerned

with Balanophoraceae and ferns, while in his later years he was busy studying Rutaceae, Aquilegia, Sempervivum and especially Primula, besides his main work on Araceae. He also described new species of various groups from Brazil out of his own collections and Turkish plants sent to him by his friend Th. Kotschy. Moreover, alpine plants from central Europe and from Roumania much attracted his attention from the point of view of a botanist as well as from that of a gardener.

Schott's herbarium specimens of Araceae and some other groups, especially Monocotyledonae, were destroyed by war action in 1945. But what seems to be even more important, a collection of about 3500 plates of drawings or water colour and tempera paintings of Araceae, of Primula soldanella and of Sempervivum, done by the most outstanding plant painters of his time under Schott's direction, is still left in the possession of the Natural History Museum in Vienna. They are among the best botanical illustrations existing, both from a scientific and from an artistic point of view. The models for these plates were either living plants or herbarium specimens or in some instances specimens preserved in ethanol. One can learn all about the habit as well as the structure of the different parts of the plants from the analyses given. From the more than 1400 coloured or partly coloured plates which are so far for the most part unpublished a first selection of about 60 plates is to be published by "Akademische Druck- und Verlagsanstalt", Graz, Austria. The same publishers are willing to reprint Schott's small articles and notes scattered all over various journals and scarcely available for the modern taxonomist.

Schott's importance as a botanist does not seem to be much lessened by the fact that a large percentage of the taxa erected by him did not survive but had to be put into synonymy, as his species concept was too narrow even for modern methods. One has to see Schott's point of view to realize the true value of what he attempted. For him, describing new species had nothing to do with our more or less clearly defined hierarchy of systematic entities but was only meant to set out the immense diversity of his material. And this seems a task useful enough in a group of plants of which most workers in the wide field of botany even today will only have the opportunity to see one or two specimens out of one or two genera and will be unable to form their judgements on a knowledge of the whole range.

As many of Schott's publications are extremely difficult for most botanists to find, a bibliography is given below which is also intended to include the short notes published in various journals of sometimes not more than a few lines in length.

#### **List of H. W. Schott's botanical publications**

**1820**

Neue brasilianische Pflanzen. Gesammelt und nach der Natur beschrieben von Heinrich Schott, k.k. Gärtner in Brasilien. 1. Lieferung. Medizinische Jahrb. d. Kaiserl.-Königl. Oesterr. Staates (1st. ser.) VI/2: 59-67 (1820).

**1822**

Tagebücher des k.k. Gärtners, Hrn. H. Schott, in Brasilien, von dessen Reisen in die Campos am Paraíba und Paraíba-Flusse, usw., in K. v. Schreiber: Nachrichten von den kaiserl. österreichischen Naturforschern in Brasilien und den Resultaten ihrer Betriebsamkeit. II. Brünn 1822.

**1827**

Henrici Schott Fasciculus plantarum Brasiliensium, in C. Sprengel: Syst. Veget. IV/2. Curae posteriores, Appendix: 403-410 (1827).

**1829**

Für Liebhaber der Botanik. Wiener Zeitschr. f. Kunst, Literatur, Theater und Mode 1829: 732, 779-780, 803, 828, 892, 1180, 1280 (1829). (Containing original diagnoses of genera and species especially of Araceae.)

**1830**

Für Liebhaber der Botanik. Wiener Zeitschr. f. Kunst, Literatur, Theater und Mode 1830: 344, 771-772, 843-844, 956, 1028, 1216 (1830).

**1832**

& St. Endlicher: Meletemata Botanica. Vindobonae Typis Caroli Gerold 1832; 36 pp., 5 tab.

**1834**

Genera Filicum. Vindobonae apud Joan. Bapt. Wallishäusser 1834; IV + 40 pp., 20 tab.  
Rutaceae. Fragmenta Botanica. Vindobonae apud Joan. Bapt. Wallishäusser 1834; 14 pp., 7 tab.

**1837**

& St. Endlicher, G. Bentham, E. Fenzl: Enumeratio plantarum Novae Hollandiae coll. a Cl. Hügel (1837). (I could not find any description or determination by Schott, though he is mentioned as co-author.)

**1851**

Die Sippen der österreichischen Primeln. Druck v. Carl Gerold & Sohn, Wien 1851; 14 pp.

**1852**

Skizzen österreichischer Ranunkeln Sectionis Allophanes. Druck v. Carl Gerold & Sohn, Wien 1852; 16 pp., 5 tab.

Wilde Blendlinge österreichischer Primeln. Druck v. Carl Gerold & Sohn, Wien 1852; 20 pp., 6 tab.

Drei österreichische Semperviva. Österr. Bot. Wochenbl. 2: 18 (1852).

Österreichische Primeln. Ibid. 35-36.

Aroideen-Diagnosen. Ibid. 59-60, 67-69.

Über eine misskannte Primel. Ibid. 267-268.

**1853**

Aroideae. Typis Caroli Gerold et Filii; Vindobonae 1853-1858; 28 pp., 59 tab. (pp. 1-4: 1853; 5-20: 1855; 21-24 and 26-27: 1856-1857; p. 25: 1856-1858 according to the dates cited in the book itself).

Österreichische Semperviva. Österr. Bot. Wochenbl. 3: 12-13, 19-20, 28-30 (1853).

Zwei österreichische Semperviva. Ibid. 83-84, 91-92.

Eine Aroidee. Ibid. 313-314.

Pflanzenskizzen. Ibid. 369-370, 378.

Über Aquilegien. Verh. d. Zool. Bot. Vereins in Wien 3: 125-130 (1853).

Ein wilder Primelabkömmling. Ibid. 299-302.

**1854**

Araceae Betreffendes I. Druck v. Carl Gerold & Sohn, Wien 1854; 15 pp.

Urostigma catalpaefolium Miquel. Österr. Bot. Wochenbl. 4: 5-6 (1854).

Pflanzen-Skizzen. Ibid. 65-66, 409-410, 417-419.

Ischarum eximium Schtt. et Kotschy. Ibid. 81-82.

Anthurium violascens Schtt. Ibid. 89-90.

Colchicum (Hermodactylus) crociflorum Schtt. et Kotschy. Ibid. 97-98.

Ornithogalum sororium Schtt. et Kotschy. Ibid. 105-106.

Eranthis cilicica Schtt. et Kotschy. Ibid. 113.

Cryptoceras rutifolium Schtt. et Kot. Ibid. 121.

Anemone blanda Schtt. et Kotschy. Ibid. 129-130.

Fritillaria aurea Schtt. Ibid. 137.

Thlaspi inornatum Schtt. Österr. Bot. Wochenbl. 4: 145 (1854).

Ornithogalum Cydni Schtt. et Kotschy. Ibid. 153.

Ornithogalum aemulum Schtt. et Kotschy. Ibid. 161.

Alyssum Cedrorum Schtt. et Kotschy. Ibid. 169.

Alyssum contemptum Schtt. et Kotschy. Ibid. 177.

Celsia Lepturus Schtt. et Kotschy. Ibid. 186.

Draba cognata Schtt. Ibid. 193.

*Erodium cedrorum* Schtt. et Kotschy. Ibid. 201.  
*Iris (Pogoniris) junonia* Schtt. et Kotschy. Ibid. 209.  
*Allium (Molium) Cydni* Schtt. et Kotschy. Ibid. 217.  
*Papaver (Rhoidion) inornatum* Schott et Kotschy. Ibid. 233-234.  
adjutoribus Nyman & Kotschy: *Analecta Botanica I. Typis Caroli Gerold & Filii. Vindobonae*  
1854; viii + 64 pp.

#### 1855

Araceen Betreffendes II. Mechitharisten-Buchdruckerei, Wien 1855; 22 pp.  
Pflanzenskizzen. Österr. Bot. Wochenbl. 5: 17-20, 65-67, 145, 273-274, 289-290 (1855).  
Zufälliges. Ibid. 25-27.  
Vermischtes. Ibid. 81-83.  
Auf die Erwiederung des Freiherrn von Hausmann Bezügliches. Ibid. 194.

#### 1856

Synopsis Aroidearum, complectens enumerationem systematicam generum et specierum huius  
ordinis. I. Typis congregationis Mechitharisticae. Vindobonae 1856: 140 pp.

#### 1857

Icones Aroidearum. Vindobonae 1857; 40 tab.  
Leucocasia. Österr. Bot. Wochenbl. 7: 33-35 (1857).  
Anthurien. Ibid. 53-54.  
Aroideae. Ibid. 61-62, 69-70.  
Mangonia. Ibid. 77.  
Hapale. Ibid. 85-86.  
Botanische Notizen. Ibid. 93-97, 109-110, 117-118, 133-134, 141-142, 157-159, 181-183.  
Ophione. Ibid. 101-102.  
Violen Betreffendes. Österr. Bot. Wochenbl. 7: 165-167 (1857).  
*Corydalis blanda*. Ibid. 149-150.  
Botanische Fragmente. Ibid. 125-126.  
Über *Arum Dioscoridis*. Ibid. 173-175.  
Arisara. Ibid. 189-190.  
Pflanzen-Skizzen. Ibid. 213-214, 245-246.  
Eine Aroidee. Ibid. 221-222.  
Aroideenskizzen: Ibid. 237-238, 253-254, 261-263, 269-270, 293-294, 301-302, 309-310, 317-  
318, 325-326, 333-334, 341-342, 349, 357, 366, 373, 382, 389-390, 398-399, 406-407, 414-  
415, 421-422.  
Über *Anthurium Hookeri* Kunth. Ibid. 277-279, 285-286.  
& Th. Kotschy: Pflanzenskizzen. Ibid. 205-206, 229-230.

#### 1858

Genera Aroidearum. Typis Caroli Ueberreuter. Vindobonae 1858; x + 202 pp., 98 tab.  
Aroideen-Skizzen. *Bonplandia* 6: 372 (1858).  
Über die Aroideen-Gattung *Theriophonum* Blume und ihre Arten. Österr. Bot. Zeitschr. 8:  
1-3 (1858).  
Aroideen-Skizzen. Ibid. 81-82, 121-122, 317-318, 349-351, 386-388.  
Über Aroideen Central-America's. Ibid. 177-182.

#### 1859

Aroideenskizzen. *Bonplandia* 7: 26-31, 163-165 (1859).  
Aroideologisches. Ibid. 102-104, 183.  
*Anthurium podophyllum* Kth. Ibid. 337-338.  
Aroideen-Skizzen. Österr. Bot. Zeitschr. 9: 38-41, 98-101 (1859).  
& Th. Kotschy: Eine neue *Saxifraga* Siebenbürgens. Ibid. 8-9.

#### 1860

*Prodromus systematis Aroidearum. Typis congregationis Mechitharisticae, Vindobonae* 1860;  
602 pp.

#### 1861

Aroideologisches. *Bonplandia* 9: 367-369 (1861).

**1862**

Neue brasilianische Aroideen. *Bonplandia* 10: 5-6, 86-87, 322 (1862).  
Aroideologisches. *Bonplandia* 10: 147-148, 222-223, 346-347 (1862).

**1863**

Aroideae (Asiae orientalis et Novae Guineae), in F. A. G. Miquel, *Annales Musei Botanici Lugduno-Batavi* I: 122-131 (1863) & 278-286 (1864).  
*Anthurium gladiifolium*, a New Brazilian Aroidea. B. Seemann, *the Journ. of Botany* 1: 5-6 (1863).  
Contribution to the History of Aroideology. *Ibid.* 197-206.

**1864**

Two New Brazilian Aroideae. B. Seemann, *The Journ. of Botany* 2: 4 (1864).  
Four New Species of Aroideae. *Ibid.* 52-54.

**1865**

Aroideae Novae. B. Seemann, *The Journ. of Botany* 3: 34-35 (1865).  
Beiträge zur Aroideenkunde. *Österr. Bot. Zeitschr.* 15: 33-35, 71-73 (1865).  
Aroideologisches. *Ibid.* 107-116.

**1879**

Aroideae Maximilianae. Die auf der Reise Sr. Majestät des Kaisers Maximilian I. nach Brasilien gesammelten Arongewächse nach handschriftlichen Aufzeichnungen von H. Schott beschrieben von Dr. J. Peyritsch. Druck und Verlag von Carl Gerold's Sohn. Wien 1879; vi + 54 pp., 1 Titelbild, 42 Farbtafeln.

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## PARAPHYSES IN THE FERNS

Rolla Tryon (Cambridge, Mass.)

In a recent number of this journal (*Taxon* 13: 56-64, 1964) W. H. Wagner, Jr. discusses paraphyses and some aspects of their terminology as used in ferns, and also proposes a new and expanded definition of paraphysis. This definition and some of the examples that he presents are inconsistent and include some ferns previously not considered to be paraphysate while excluding some that have been. The extension of the term has a doubtful utility since many of the genera and species that will fall under it will also be non-paraphysate.

The term paraphysis traditionally has been used in the ferns for several kinds of special sterile structures associated with sporangia. Such structures are most commonly absent in ferns with the result that the term has a somewhat limited utility for reference to those taxa in which they are present and for comparison with related ones in which they are absent. Rather than to enlarge the scope of the term, it would seem preferable to promote a greater precision of usage by a critical analysis of the different kinds of these special structures.

Wagner's definition of paraphyses is "... 'sterile organs in the sorus intermixed with the elements of a sporangial cluster', no matter where they are formed or what their homologies are, so long as they arise within the sorus, either from the sporangia themselves, the receptacle, or the inner side of the indusium."

This definition excludes traditional paraphysate genera such as *Acrostichum* (although cited by Wagner as paraphysate) because it requires that paraphyses be within a sporangial cluster or sorus. Ferns that have no sorus, therefore, cannot be paraphysate. *Acrostichum* has no sorus, the sporangia being scattered over the segment surface, but it does have trichomes among the sporangia which have the apex enlarged or capitate and these have been generally called paraphyses.