BLUMEA 25 (1979) 103 – 106

THE COLLECTIONS OF PTERIDOPHYTES AT THE RIJKSHERBARIUM

E. HENNIPMAN
Rijksherbarium, Leiden

Since the foundation of the Rijksherbarium, pteridophytes have been an important part of the total collections. Blume, the first director, had a special interest in ferns. In 1826, when he returned to Europe from his stay in Java, he took with him large collections of well preserved pteridophytes which he had gathered there himself. These, together with the fern collections of Van Hasselt, Kuhl (both from Java), and Zippel (Java, Moluccas, New Guinea), were all deposited in the Rijksherbarium.

Blume's studies on the ferns of Java, both in the wild and in the herbarium, were published before the foundation of the Rijksherbarium in the second fascicle of the 'Enumeratio Plantarum Javae et insularum adjacentium minus cognitarum vel novarum' (1828) in which the author enumerated 500 species of ferns and fern allies of which, apart from many new varieties 338 were new to science. Moreover, five new genera were proposed: *Kaulfussia* (a synonym of *Christensenia*), *Gymnosphaera*, *Diacalpe*, *Arachniodes*, and *Stegnogramme*. Although no keys are provided, the concise descriptions are diagnostic and meet the highest scientific standards. For nearly all the taxa, additional information on the habitat or the precise locality is given. No words can better illustrate the high quality of Blume's work then by stating that most of the species at present recognized as being native to Java, are included in the 'Enumeratio'. It was indeed the first critical fern flora for a tropical region, convincingly displaying the enormous diversity to be found in circumstances of a warm climate and high humidity. The 'Enumeratio' was followed by the Flora Javae (1828 – 1851) in which Blume illustrated over a hundred fern species – nearly all of them for the first time – on 96 hand coloured folio plates of which the typography, especially of the first fascicles, is superior.

In these early years the fern collections were further enriched by Von Siebold (Japan) and Korthals (various parts of Malesia, but especially Sumatra), to mention only the most important contributions of that time.

A new era set in when Miquel succeeded Blume in 1862 and made the fern collections available to Mettenius, professor at Leipzig, no doubt one of the most brilliant pteriodologists that ever lived. Apart from Miquel's contributions, the latter's publications in the 'Annales Musei Botanici Lugduno-Batavi' again showed the historical collections to be a rich source of study, and of vital importance for the progress of fern systematics. From that same period date the annotations on the *Hymenophyllaceae* by Van den Bosch, a medical doctor at Goes who got his botanical training from Reinwardt, author of several important papers relating to this group.

When Suringar became director (1871 – 1898) large collections of tropical pteridophytes were acquired through exchange and by purchase. As a result, especially through the acquisition of many specimens from tropical Africa and America, the general character of the pteridophyte herbarium greatly improved.

In the first half of this century, activities around the pteridophyte collections at Leiden became markedly quieter. The paleotropical ferns in the Rijksherbarium were between 1915 and 1922 all annotated by Rosenstock, professor of botany at Gotha. Merrill supplied a large number of fern-duplicates from the Philippines, of special interest since the complete destruction of the Manila herbarium during World War II. From the many specimens brought together by the many botanists that explored the Dutch East Indies at that time, only duplicate material was sent to Leiden, the first set being deposited as a rule in the herbarium at Buitenzorg (e.g. those of Van Alderwerelt van Rosenburgh, Lörzing, Bünnemeyer, Van Steenis, and many others). For the Rijksherbarium this trend had the logical consequence that the steady increase of collections received through exchange came practically to a halt. On the other hand, the herbarium at Buitenzorg was able to augment their Far Eastern collections considerably; they are now well preserved in the new building of the Herbarium Bogoriense. Apart from Bogor, rich collections from Malesia were brought together in the private collections of the leading pteridologists of that time, e.g. Christ, Christensen, and Copeland, later acquired by Paris, the British Museum (Natural History), and the University of Michigan, respectively. It is regrettable that through lack of funds (or opportunity?) the Rijksherbarium was unable to obtain at least one of these important and unique collections that could have been a worthy addition to the classic material already present in Leiden.

After the last War, however, a revival of interest in the study of the pteridophytes in Leiden gradually became apparent. Many new specimens, especially from New Guinea were obtained. This was the result of numerous expeditions in that area, e.g. the expeditions by Brass (Archbold expeditions), the Forestry institute in West (formerly Dutch) New Guinea and especially that in Lae (East New Guinea). Also, the Rijksherbarium itself has organized extensive expeditions since 1954 to that island (by Van Balgooy, Kalkman, Van Royen, Sleumer, Veldkamp, Vink, and others). The duplicates that became available from that source made it possible to revive successfully the old policy of exchange not only with marked results for the number of specimens acquired, but also broadening scientific contacts on an international scale.

A long cherished wish to appoint a special curator for the pteridophytes was realized under the directorship of Van Steenis (1962 – 1972). Apart from various teaching activities in the biology curriculum at Leiden university E. Hennipman set up a special library for fern taxonomy, and started re-arranging and pre-identification of the fern collections. Since 1971 he was assisted in this work by the honorary collaborator G. J. de Joncheere.

Close co-operation was established with the Royal Forest Herbarium at Bangkok in 1965. By the joint organization of several expeditions in Thailand (Smitinand, Phenghkhlai, Hennipman, Van Beusekom, Geesink, and others) many ferns were included in the Rijksherbarium. The collection of Thai ferns became even more

representative through exchange with Thai ferns collected by botanists from the Kyoto University (Tagawa, Iwatsuki, and others).

Further noteworthy recent contributions to the Rijksherbarium were made by several botanists to mention only W. J. J. O. de Wilde and B. E. E. de Wilde-Duyfjes (Sumatra), Price (Philippines), Jacobs and Kostermans (Malesia), and De Joncheere (his private herbarium mainly with ferns from Europe, South Africa, and Ethiopia). Exchange programs exist with other international herbaria concentrating on Malesian ferns like the British Museum (Natural History), London, the Royal Botanic Gardens, Kew, the Smithsonian Institution, Washington and especially the herbarium at Kyoto.

The ferns accumulated in the Rijksherbarium now include apart from the invaluable historical collections from Blume's time, a representative collection of ferns in general with an emphasis on Southeast Asia. It is regularly consulted by leading pteridologists of our time, whereas its study is, already for nomenclatural reasons, imperative for the pteridologists from various countries now involved in monographic studies or revisions for the Flora Malesiana.

Revisions of Malesian Pteridophyta are published in Ser. II of Flora Malesiana. Volume 1 (1959–1978) contains treatments by its editor, Prof. Holttum, Kew (introductory chapters, *Gleicheniaceae*, *Schizaeaceae*, *Cyatheaceae*), Prof. Kramer, University of Zürich (*Lindsaea*-group), and the late Dr. A. H. G. Alston, London (*Isoetes*). The first volume will be completed by the *Lomariopsis*-group (Prof. Holttum, all genera except *Bolbitis* which is done by Dr. Hennipman). Ferns now under study by collaborators include the *Blechnaceae* (Prof. Chambers), *Davalliaceae* (Mr. De Joncheere, Rijksherbarium), *Grammitidaceae* (Dr. Croxal, Cambridge, U.K.), *Hymenophyllaceae* (Prof. Iwatsuki, University of Kyoto), *Pteridaceae* (Prof. Kramer), and the *Polypodiaceae* (Dr. Hennipman).

Since Hennipman became curator he has published on several small genera including *Pteridoblechnum (Blechnaceae)*, *Todea (Osmundaceae)*, *Austrogramme (Adiantaceae)*, as well as on the ultrastructure of the spores of *Bolbitis*. His main object of study was, however, the classification within the genus *Bolbitis* (*Lomariopsidaceae*) on which a world-monograph was published in 1977. For this study a great number of plants could be taken in cultivation thanks to the co-operation with the Leiden Botanical Garden.

At present Hennipman is involved in the systematics of the *Polypodiaceae*, a large group recognized as one of the difficult taxonomic groups urgently in need of research. During the last few years extensive analyses have been prepared on several characters, including types of venation pattern, types of rhizome scales, and types of spores. The latter have been studied jointly with Dr. T. Sen (who received a visitor's grant from the Dutch Organization for the Advancement of Pure Research Z.W.O.), using scanning and transmission electron microscopy which gave very interesting results pertaining to the general classification within the genera. Further, gametophytes of *Polypodiaceae* are now being studied under experimental conditions (in a so-called phytotron) in the Leiden Botanical Garden.

Three graduate students have taken up genera of Polypodiaceae for monographic work: *Belvisia*, *Drymoglossum* (which will be included in *Pyrrosia*), and *Platycerium*. On the latter genus some publications have also appeared by De Joncheere and Hennipman.

The Asian *Davalliaceae* are the main object of the studies of De Joncheere. A first contribution on *Humata* has been published (1977).

REFERENCES

HENNIPMAN, E. 1977. A monograph of the fern genus Bolbitis (Lomariopsidaceae). Leiden Bot. Ser. nr. 2, 331 pp.

JONCHEERE, G. J. DE, 1977. Specific concept in Humata pectinata (J. E. Sm.) Desv. Gard. Bull. Sing. 30: 45 – 58.