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Photography by M. Fagg

SOFT TREE FERN—*Dicksonia antarctica* Labill.

A grove of soft tree ferns in cultivation in the Canberra Botanic Gardens.

AUSTRALIAN FERNS

Propagation — Cultivation — Identification

AN INTRODUCTION TO FERNS

by J. A. Adamson & I. R. H. Telford, Canberra Botanic Gardens

The plants included under this name comprise an entire order, made up of some distinct families. They include plants varying in size from a hair-like creeping stem bearing a few simple moss-like leaves, to tall trees eighty or more feet in height, with a stem or trunk nearly a foot in diameter. The extremes in size are both found in tropical regions, in which most of the species abound. Most of the ordinary species. as well as the larger part of those in cultivation, consist of erect underground stem or rootstock with leaves, often called fronds, clustered in dense crowns, or in the cases of creeping stems, with scattered leaves. In gardening parlance, other plants are sometimes called ferns, such as species of *Lycopodium* and *Selaginella,* as well as *Asparagus plumosus.*

CLASSIFICATION

The ferns are commonly classified as *part* of a group of spore-bearing plants, with vascular (woody) tissue in stem and leaves. This group is technically known as the Pteridophytes, and, based on Engler's 1954 edition of Syllabus der Pflanzenfamilien (Reimers), includes the (living) groups *Psilotopsida, Lycopsida, Sphenopsida,* and *Pteropsida.*

Some botanists widen the definition of the *Pteropsida* to include not only the megaphyllous pteridophytes, but also the gymnosperms and angiosperms, on the supposition that all three groups are related. However it appears to be preferable to retain the distinction between pteropsida (true ferns) and seed-plants, and exclude all but the ferns. Even so, the group is enormous, and shows such a wide range of form and structure that is almost impossible to name one character which is diagnostic of the group. Accordingly, there are almost as many different ways of classifying the group.

Great diversity also has existed in the matter of the separation of the ferns into genera. Hooker, relying mainly on artificial characters drawn largely from the sorus, recognized about seventy genera only, many of them heterogeneous groups of plants with little resemblance in structure, habit, or natural affinities. John Smith relying on stem characters, Presl on variation in venation and habit, Fee, Moore, and others, have recognized a much greater number of genera ranging from 150 to 250, or even more. In the very unequal treatment by Diels in Die Natulichen Pflanzenfamilien (Engler and Prantl), some 120 genera are recognized. A somewhat similar difference exists in regard to the number of species. The Synopsis Filicum of Hooker and Baker (1874), supplemented by Baker's New Fern (1892), recognized some 2,700 species, but this work failed to recognize many valid species which have been described by German and French botanists; it also massed under one name very diverse groups of species from distant quarters of the world. The Index Filicum by Carl Christensen (1905), recognized 150 genera and 6,000 species which has now increased to over 10,000.

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FERNS—Many people interested in these fascinating plants have become frustrated by the meagre and conflicting information about them. We have delayed articles on ferns in "Australian Plants" for 10 years seeking a competent botanist with artistic ability, to systematically present the whole fern family in a clear, easily followed, illustrated series. We have secured the services of Ian Telford who commences with "Tree Ferns" opposite. ENVIRONMENTAL RESEARCH—We should all be vitally concerned with the preservation of the environment Nature has bestowed upon us. The new era of co-operation and mutual assistance by Government agencies with the people to whom they are responsible is evident in this issue. Readers, do more!