FERNS OF THE BRITISH ISLES. DESCRIBED AND PHOTOGRAPHED

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Described and Photographed.

BY

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PREFACE.

NOTWITHSTANDING the number of works upon British Ferns which have been published of late years, the author believes this little volume may be found of some service.

It is not intended as a substitute for the admirable treatises of Newman, Sowerby, Moore, and others, but rather as a convenient Handbook for Amateur Collectors, which will give correctly, and without the necessity of much searching, the distinguishing features of every species, and the means of quickly identifying any specimen that may be found. With this aim, the author has limited the contents of the volume to an accurate and concise account of each Section or Group, Genus, and Species, and has purposely omitted any description of the methods of cultivation, propagation, drying and preserving, &c., as full particulars on all these points are to be found in many other books.

The Habitats are mentioned in general terms, but are not precisely and minutely described according to

the practice of some writers, who have done their best to hasten the extermination of many of the rarer kinds of ferns. Varieties of some species are occasionally met with, but only a few of the most important are described. On the other hand some ferns here given as distinct species, are considered as only varieties by other authors. The genus of any of them can be easily ascertained from the fructification.

The photographs are all from specimens collected by the author, and the woodcuts are enlarged and drawn from nature. The former will bear examination with a low-power magnifying glass, which instrument it may be added, is almost indispensable to the fern collector.

A slight sketch of the structure and reproductive organization of Ferns is also given.

A Glossary and a Table of Synonyms will be found at the end of the volume.

Structure and Reproduction.

It is not intended in the present volume to enter into any detailed description of the structure and mode of reproduction of ferns; but a few words on the subject may not be out of place.

The name "Fern" is given by botanists to a certain division of plants which do not bear flowers, but which produce their seeds or germs either on the leaves themselves, or on a separate naked branch of the leaf devoted to that purpose.

These germs or *Spores* are very minute, angular bodies, contained in circular or oval vessels called *Thecæ* or *Sporangia*, (*see page* 60), which are in most cases encompassed by an elastic ring or *Annulus*. The thecæ usually grow in clusters, called *Sori*. When mature, the annulus dries up, contracts, and bursts open, thereby rending asunder the theca and ejecting the spores contained within. In such of the species as have no annulus, the thecæ are two-valved, and open of themselves when mature.

Each of the spores which falls on suitable ground, begins to germinate, and sends downwards hair-like roots; and, nourished by these, gradually developes into a flat green expansion termed the *Prothallium*.

On the under surface of this prothallium, appear in course of time two sets of organs, the *Archegonia*, and the *Antheridia*. The archegonium appears at first as a

small raised portion of the surface of the prothallium, which grows more elevated as it developes, until it finally becomes a conical protuberance, at the base of which is the *Germ-cell* containing the young germ. Above this germ-cell is a second cell filled with a mucilaginous fluid, which after a time swells, and forces a passage through the apex of the archegonium, around which it collects.

The antheridium first appears as a large circular cell enclosed in a projecting portion of the surface of the prothallium. A quantity of smaller cells can soon be observed in the interior of the larger one, each of which contains a coiled up filament called an *Antherozoid*. These antherozoids are, in course of time, set at liberty by the bursting of the surrounding cells; and when unfolded, are minute, thread-like bodies, furnished at their smaller extremity with several long arms or *Cilia*.

On issuing from their cells, the antherozoids rotate and appear to be endowed with the power of independent motion, which is believed to be due to the before-mentioned cilia. As they move across the surface of the prothallium, many of them are retained by the mucilage collected round the orifice of the archegonium, and by its means, find their way along the passage to the germ. This is fertilized by contact with the antherozoids, and from it a young plant begins to grow.

Some time after fertilization the prothallium decays and dies away. It may frequently be observed attached to the young plant.

Classification.

Writers upon British Ferns are not at all agreed as to their correct classification; nor, in the case of many species, have they adopted the same names. The usual plan, and the one which has been followed here, is to divide them into three principal Groups, which are again sub-divided into the various Genera and Species.

In the following pages are described, first the distinctive features of each Group; then those of each Genus belonging to that Group; and lastly those of each Species belonging to that Genus. It is chiefly by the arrangement and description of the sori, indusia, and veins, that the Group and Genus of any fern is determined.

In the case of perfect and mature fronds identification is easy even for beginners; but it is often impossible for anyone to name young or seedling plants with accuracy. The table, page 53, will be found of assistance in distinguishing between some of the species which most resemble each other.

The three principal Groups into which British Ferns are divided, are—

I. Polypodiaceæ.
II. Osmundaceæ.
III. Ophioglossaceæ.

Polypodiaceæ contain 16 Genera; Osmundaceæ 1 Genus; and Ophioglossaceæ 2 Genera. These are again sub-divided into various Species.