

INTRODUCTION

This book is the result of an attempt to find plants that would flower in the open in the winter months in Surrey. The fascination of the first Iris flowers that were obtained led to an interest in the whole genus, and it soon became apparent that our knowledge of it was very defective.

In the attempt to remedy this defect, I have refused as far as possible to take anything for granted and have therefore made little use of the various Floras of different districts and regions because investigations into the original descriptions of the various species and acquaintance with the plants commonly cultivated under these names proved that there was very great confusion in Iris nomenclature and that it was accordingly impossible to rely on the statements in local Floras to the effect that certain species of Iris were natives of certain districts.

The method that appeared most likely to give satisfactory results was first of all to go back to the original descriptions of all the supposed species of Iris, amounting to some seven hundred, and to endeavour, with the help of the type specimens, wherever these were available, to arrive at some conclusion as to which of the names were worthy of specific rank and which were to be regarded merely as synonyms.

This puzzling and somewhat tedious task was carried out for the most part in the excellent botanical library of the Kew Herbarium, and I owe a great debt of gratitude to the officials there and especially to Dr Stapf, the Keeper, and to Mr Skan, the Librarian, for their never-failing courtesy and ready help. The former gave me invaluable hints as to method and without the extensive bibliographical knowledge of the latter my search for various obscure references would often have been fruitless.

When I had thus arrived at some idea of the various species, I proceeded to check it by working through all the available herbarium material, which at the same time provided me with details as to the distribution of each species. In arranging my information under the heading of "Distribution," it seemed better to be able to vouch personally for each entry, and I have therefore quoted no specimens that I have not examined myself. Since in nearly every case the date and the collector's name are given as well as the indication of the collection in which the specimen is now to be found, it is hoped that there will be no difficulty in determining what plant I take to be meant by any specific name.

This method has doubtless the drawback that the full extent of the distribution may not always be indicated, but there is perhaps some compensation for this defect in the fact that the errors of local Floras are not perpetuated. The collections examined include those at Kew, in the British Museum (Natural History Branch, South Kensington), at Oxford, Cambridge, Edinburgh, at the Berlin Botanic Garden, and at the Vienna Hofmuseum. In addition, I have examined a number of specimens from the Jardin des Plantes at Paris, from the United States National Museum at Washington, D.C., from M. Léveillé's collection of Chinese plants at Le Mans, a small collection of Italian specimens belonging to Prof. Terracciano and part of the collection of the Imperial Botanic Garden at St Petersburg.

The letter in brackets after each specimen quoted indicates the collection in which the specimen is to be found. The following are the abbreviations used.

- K Kew Herbarium.
- BM British Museum, Natural History Branch at South Kensington.
- O Oxford University Herbarium.
- C Cambridge University Herbarium.
- E The Herbarium of the Edinburgh Botanic Garden.
- B The Herbarium of the Berlin Botanic Garden.
- P The Herbarium of the Jardin des Plantes at Paris.
- V The Herbarium of the Vienna Hofmuseum.
- SP The Herbarium of the Imperial Botanic Garden at St Petersburg.
- L M. Léveillé's Chinese plants at Le Mans.
- W The Herbarium of the United States National Museum at Washington, D.C.
- T A collection, chiefly of Italian specimens, lent to me by Prof. Terracciano.

HortD Indicates that the plant is, or was, in cultivation in my garden, and in most cases that it came to me direct from the locality named.

If there is one point more than another that has come into prominence in the course of this work, it is the endless confusion that arises from the fact that new plants are described without reference to the most closely allied, previously known species of the same genus. Thus Maximowicz in describing his *I. Bungei* is careful only to distinguish it from *I. songarica* Schrenk, with which no one would easily confuse it; moreover, conveniently for himself, and inconveniently for us, he omits any mention of *I. tenuifolia* Pallas from some specimens of which it is much more difficult to distinguish it.

There is little doubt that, at least in the case of Irises, herbarium material, un-supplemented by a knowledge of the living plant, is most misleading, and it has therefore been my endeavour to grow in my garden specimens of all the available species, and to introduce, or reintroduce, into cultivation, species that were not readily obtainable. In this I have been greatly helped by the kindness of many friends and correspondents and take this opportunity of expressing my gratitude to them. The following list of those to whom I am indebted is, I am afraid, incomplete, but any omission in it is certainly not intentional.

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The Calcutta Botanic Garden.

Mr Walter Deane, Cambridge, Mass.

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The late Sir Michael Foster.

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The Hon. N. C. Rothschild, London.

Sir John F. Rotton, Godalming.

Mons. A. Schelkownikow, Chaldan.

Herr F. Scheubel, Oberlahnstein.

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Dr W. Trelease, St Louis, Mo.

Mr C. G. van Tubergen, Junr., Haarlem.

Dr J. Velenovsky, Prague.

Mons. Philippe de Vilmorin, Verrières-le-Buisson.

Dr R. Wagner, Vienna.

Dr A. Fischer von Waldheim, St Petersburg.

Messrs R. Wallace & Co., Colchester.

Dr R. v. Wettstein, Vienna.

Miss E. Willmott, Great Warley.

G. Yeld, Esq., York.

Dr A. Zahlbrückner, Vienna.

My greatest debt of all is due to the late Sir Michael Foster, who encouraged me to undertake the investigation into the whole genus. My acquaintance with him was all too short, but it was long enough to make me appreciate that generosity with which he placed his knowledge and his plants at the disposal of those who followed in his footsteps. We can never cease to regret that he himself found it impossible to give us a monograph on the Iris genus but he was always unwilling to take any steps towards this end.

At his death, there passed into the hands of Miss Willmott of Warley Place, about a dozen rough notebooks, containing accounts of some of the Irises that flowered in his garden at Shelford and illustrated by accurate pencil drawings of the flowers. For some years every plant or packet of seeds that Foster received was identified by the date of the year in which it reached him and by a letter of the alphabet, e.g. 88 D or 90 EE, and a page was devoted to it in one or other of the notebooks. Each entry usually begins with a note of the appearance of the rhizome or seeds and sometimes ends abruptly with the laconic expression "All died." In other cases minute descriptions are added

of the plants turned out to be a new species. This is obvious if the notes are compared with the published descriptions in the Gardener's Chronicle, the Botanical Magazine and elsewhere, for the phraseology is identical or only slightly modified.

These notebooks have been most kindly lent to me by Miss Willmott, and I owe much to the insight into Foster's methods which I have derived from the perusal of them. Unfortunately they have proved to contain little information that is not already available in one or other of the above-mentioned publications. In other words, the only cases in which a complete description of a species is given are precisely those in which Foster himself published the plant as new. In other cases, it is provoking to find a plant described by some such entry as the following, "practically a yellow Notha" or "a form of *tolmeiana*," because we nowhere find any definition of what Foster himself understood by these names. These concepts, which existed in his mind, were never recorded, and their loss has deprived his notes of much of their value.

Here and there, however, the notes have given unexpected help in clearing up difficulties, as for instance in the case of *I. masia*. This was known to Foster as *I. masiae*, though the name apparently meant nothing to him. He merely recorded that he received a plant bearing this name from Max Leichtlin and gave an incomplete description of it, when it subsequently flowered. Two or three years ago I was fortunate enough to find in the Kew Herbarium an undetermined Iris, discovered by Sintenis near Süverek in Asia Minor, which I recognised as being identical with Foster's *I. masiae*. It is well known that Max Leichtlin often obtained plants and seeds from Sintenis and the missing link in our information was supplied by the discovery that a range of hills known to the Ancients as Mons Masius lies close to Süverek. Sintenis' herbarium specimens do not tell us much of the flowers, but with their aid and with Foster's notes we are able to compile a fairly full account of this interesting species¹.

Except in a few cases of this sort, Foster's notebooks have been of little direct use for the reasons already explained, but I have endeavoured to acknowledge my debt whenever I have derived any information from them.

An apology is perhaps due for the unsatisfactory state in which the accounts of some of the most widely distributed Irises have been left. The difficulty lies in the fact that of such species as *aphylla*, *ruthenica*, *ensata* and *spuria* there appear to be almost innumerable local forms, which cannot satisfactorily be separated when dealing only with dried herbarium specimens. Living and indeed growing plants are absolutely necessary and, though by diligent search in gardens, many of these forms can be got together, it is by no means easy to obtain a series of wild forms from known localities. Even when wild plants or seeds are procured, it is necessary to grow them side by side for a year or two before their true characters can be seen, for soil and cultivation have often great influence on the growth of the plants, which usually seem to grow much more luxuriantly than in the wild state. This is not always the case, however, for in some rich natural soils, specimens are to be found that are as luxuriant as any cultivated plants and which, as herbarium specimens, appear at first sight to be distinct from the dwarf plants that form the majority. *Iris ruthenica* is a good instance of this variability. In favourable conditions the stems produce two flowers while in weaker plants each stem produces only a single flower. There is, however, no ground for setting up a separate form or even species under the name of *uniflora*, when all specimens agree in the character of the foliage, spathes, capsule and seeds. The last are peculiar and unlike those of any other known Iris. It is, moreover, a curious fact that at least among the beardless Irises, each species has characteristic seeds by which it can readily be recognised, and we therefore seem justified in grouping together under one specific name the various local forms of this Iris that undoubtedly exist.

In the same way *I. ensata* is very variable, but all the forms are at once distinguishable from all other species by the curious capsule (see Fig. 11, p. 87). The case of *I. aphylla* is, perhaps, more difficult, but, at present, it seems advisable to group together under this name all dwarf bearded Irises from Central Europe and the Caucasus in which the stem forks either low down near the ground line or at any rate below the middle. No other bearded species has a lateral branch, which is nearly as long as the main stem, and the change that a year's cultivation produced in collected rhizomes from the Caucasus makes it very inadvisable to attempt at present any definite grouping of the various forms of this species².

In the case of *I. spuria* some attempt has been made to separate several of the various forms, but it is necessarily incomplete and tentative.

It is somewhat surprising that the professional botanist should so frequently be entirely lacking in horticultural enterprise. It is true that this lack of enterprise can often be accounted for by considerations of time and space, but yet it is remarkable that there is so seldom any opportunity afforded for working out with living plants in a botanical garden the problems that arise in the herbarium. Doubtless, the specialist is apt to attach an altogether exaggerated and entirely unjustifiable

¹ I have since found both in the Vienna and in the Paris collections further specimens collected by Sintenis with the name *I. masia* suggested by Dr Stapf, who, however, never published any description of the species.

² Bieberstein's description of *I. furcata* makes the spathes one-flowered and the withered stem on collected plants confirmed this, but after a year's cultivation in my garden two flowers in a spathe were common. This instance serves to show the difficulty of distinguishing and grouping the local forms.

importance to his own particular branch of a subject, but it is impossible to deny the proposition that no satisfactory definition of a botanical species can be given without a knowledge of the behaviour of the plant under varying conditions of growth, in the wild state and in cultivation, and of the extent to which seedlings may vary within the limits of the species.

It has therefore been my endeavour to obtain plants or seeds of as many species as possible direct from the localities from which the types of the species were originally obtained and then to observe their behaviour under cultivation. Seedlings of as many species as possible have also been raised in order to determine the limits of their variability. In analysing the results thus obtained, it has been impossible to avoid feeling how utterly the Mendelian laws have shaken the basis on which our ideas as to what constitutes a species were founded. It can no longer be accepted that any Iris that breeds true from seed is a species, for Mendelian recessives necessarily breed true when self-fertilised. This has been abundantly proved by such instances as those of the white forms of *I. tectorum*, *I. sibirica*, *I. orientalis*, etc., among seedlings of which no blue flowered plants have been known to appear. And yet these white forms cannot be called species for they only differ from the type in the absence of the blue colouring matter. Even such a form as *I. versicolor kermesina*, with flowers that are almost crimson, breeds true to that colour when self-fertilised and so does the form of *I. pseudacorus* in which the brown markings on the falls are absent. Yet neither deserves specific rank.

It is useless to pretend that the task of establishing the boundaries of each species is accomplished, for many Iris species are still unknown except as herbarium specimens and of others, for instance of the *Oncocyclus* species, it seems impossible in England to raise seedlings on any adequate scale. On the other hand, it seemed better to publish the results already obtained in order that help may be invited in dealing with the less known species. It is obvious that it is of very great assistance to obtain either living rhizomes or seeds of any wild Iris, especially if accompanied by a note of the exact locality in which the plants or seeds were collected and possibly also by some indication of the conditions of soil and environment under which they were growing¹.

It has in many cases seemed inadvisable to give very accurate measurements of the various parts of the different Irises, because the dimensions are liable to very considerable variation under varying conditions of position, cultivation, climate, etc. What are really important are not the absolute but the relative proportions of the various parts and therefore it would be misleading to give definite measurements². Even seeds are liable to great variation and the drought of 1911 was enough to reduce by one half the size of the seeds of the tall *I. spuria* from Kashmir, illustrated at Plate XV, although the plants had not been disturbed. It is for this reason that little weight need be given to such contentions as that the mere size of the seeds is enough to distinguish *I. caroliniana* Watson as a species from *I. versicolor* L. Different conditions of soil and moisture are quite enough to account for the differences in size given by Watson and he does not seem to have insisted on any other real difference.

It might have seemed desirable to include a calendar showing the dates at which the various species may be expected to flower and indeed I had collected data for such a list. Eventually, however, further knowledge of the behaviour of species in such widely separated districts as Edinburgh, Surrey and Hérault and the extraordinary effects in my garden of the hot spring weather of 1912 showed that the limits of the flowering season of each species would have to be so widely separated as to render any such list as was contemplated of little or no value.

¹ For methods of packing and treatment of freshly imported plants, see p. 16.

² There are a few exceptions to the rule that the relative measurements of the parts of an Iris do not vary to any appreciable extent. One of the most striking examples of such variation is *I. subbiflora* (see p. 145).