

PART TWO

DETAILED REPORTS

Report No. 1Botany.

While The American Iris Society has never been in a position to conduct research, it has encouraged research among its members and at times financed special studies at botanical institutions.

The first Committee on Botany adopted Dykes "The Genus Iris" as the standard for botanical nomenclature. Many botanical articles and reviews of botanical books were published from time to time and much information not ordinarily available has been secured for our members. As an example, R. S. Sturtevant's preface to Bulletin No. 10 is here reproduced:

"The Iris family contains not only the Iris, but also Crocus, Gladiolus, Sisyrinchium, Montbretia, Ixia, Tigridia and Moraea, which last takes the place of the Iris in the southern hemisphere. The Genus Iris is subdivided into two sections, the bulbous and the non-bulbous, creeping root-stocks called rhizomes. The Bulbous species thrive only in favored gardens; experimentally one may try *alata*, *reticulata*, the Junos and the Dutch, Spanish and English Irises. The rhizomatous Irises, however, are often so easily grown that we may find them run wild in a moist meadow, or as the sole remnants of a once gay garden.

"Even within this subsection our interest is still further limited because the *regelia* and *oncocyclus* varieties from Syria and Asia Minor respond only to the expert. The hybrids between these and our garden varieties are also of uncertain growth, and the lovely but delicate

California Irises, the crested *tectorum*, *gracilipes*, and *cristata* are all of minor importance. These last present no great difficulties in culture, but they are not adapted to strong competition with other perennials. Try them by all means at the front of the border, or in the rock garden, but protect them from too rampant neighbors.

There still remains a wealth of variety among the garden Irises which only need to be stepped on to grow and flourish. Culturally, botanically and esthetically, they fall into two groups; bearded and beardless, the first with broad sword-like leaves, the second usually much more grass-like in appearance. The Iris flower has six segments, the three upper petals we call standards, the three dropping or spreading petals falls, and in addition to these there are three style-branches which arch over the pollen bearing stamens and bear on their under side near the extremity a small projecting lip, the stigma. The styles form the roof and the haft, or base of the falls the floor of a sort of tunnel. It is on the haft that we find the beard, crest, or attractive blotch of color that serves as the distinguishing mark between the different sections of rhizomatous Irises. In the Bearded Irises both standards and falls are much of a size, but in the Beardless species the standards are often very small and only in the Japanese are the flowers at all comparable in total size to the Bearded varieties. It is partly for this reason, but perhaps even more from their ease of culture and wide range of color that the Bearded Irises derive their popularity as one of the indispensable hardy perennials.

"NATIVE SPECIES: With the exception of *cristata*, an *Evansia*, or *Created Iris*, they all belong to the beardless group. California is richest in species but all are difficult to transplant and are not even easy to establish when grown from seed. With the exception of *longipetala* and the closely allied *tolmiana* all are lime haters. *Longipetala* likes a heavy soil quite moist in winter and dry in summer; *douglasiana*, *purdyi* and *bracteata* with less densely clustered rhizomes like moist open woods in soils tending to clay, while the stringy rhizomes of *tenax* and the wiry rhizomes of *macrosiphon* prefer a loose porous soil in dry open woods. They vary in height from six to eighteen inches and the delicate flowers are varied also, white, lavender, pale yellow.

"These species we find in humid mountain valleys all along the western coast, but as we come eastward to the Rocky Mountains only *longipetala* climbs with us and as we cross the divide we come upon *missouriensis* and its variety *montana* in greater and greater profusion. From Montana southward to Arizona and eastward to Dakota this is the one species, typically blue-lavender, but occurring in deep blue and white. There is a rumor of a colony of the old-world *spuria* in Texas and perhaps the white bearded *Iris*, *albicans* which the Moors used in their cemeteries thruout Northern Africa and Spain may have journeyed with the church fathers to the old missions by the Mexican border, but these would be escapes not native species.

"To the northward in the Great Plains *versicolor* the common Blue Flag of the northeastern states is found in moist swamps. From Illinois south to Georgia and Texas the uniquely tawny hued *fulva* occurs and from Kentucky south to Florida the taller, more lush appearing *hexagona*.

*Foliosa* and *Lancei* in white or purple are forms of *hexagona* while *virginiana* and *caroliniana* are mere local variations of *versicolor* which varies in color from white to blue or red purple. With the exception of the grassy leaved *prismatica* of eastern coastal marshes, the wire leaved *setosa* that pervades the entire sub-arctic region, and the related *tripetala* of the southern pine barrens there are but two other native species to be considered.

"The first, *verna*, is also an apogon but its short evergreen leaves are not at all typical and the almost stemless little flower, a melting blue purple in clear contrast with a vivid orange splotch, hardly seems like an Iris. Its habitat is a shaded, well-drained slope from Ohio and Virginia southward. It is as fascinating as the equally small *cristata* that is found throughout the same district and is not particular as to soil. The variety *lacustris*, slightly deeper lavender in tone, is found in isolated localities along the Great Lakes.

"*Cristata* and a hybrid form of *foliosa*, *Dorothea* K. Williamson, are the only ones that I should plant in a small garden. It is fun to bring native plants into the garden but they merit a place as reminders of a pleasant day rather than for their intrinsic value as effective perennials.

"EXOTIC SPECIES. Various exotic Irises may have escaped from cultivation in long settled localities. The bearded varieties so rarely set seed that they are more likely to be found in abandoned gardens than in the wild, but the beardless seed profusely and the seed is often carried along a stream. The commonest is *pseudacorus*, the European Yellow Flag with bright yellow flowers and bold six foot leaves.

The grassy leaved gramina with its fruity fragrance would be an uncommon find but it is only a matter of time before the showy *sibirica*, *orientalis*, *spuria*, and perhaps Japanese varieties become naturalized.

"All of these are well suited to naturalizing, some may not be worth having in a small garden but massed by the hundreds in open meadows or by the water they would be a wondrous sight."

Similarly, Mr. Sturtevant's review of *Bearless Iris* in Bulletin No. 10 is an important contribution to *Iris* knowledge and will long continue to be an authoritative text, as will his longer article in Bulletin No. 34, dealing with wild gardens with emphasis on the new American species. This is perhaps the most complete article of this nature yet to be published, and aside from its interest to the members at the time is a valuable contribution to *Iris* literature for this reason.

Bulletin No. 12 reviews W. K. Dykes' "The Hand Book of Garden Irises," with its twelve chapters of botanical descriptions and garden notes and fine line drawings. While *Irises* have grown so tremendously in popularity, we have had no adequate book covering the Genus as a whole from the garden point of view. The botanical works of Baker and of Lynch are out of date as well as out of print, and "The Genus *Iris*" by Dykes is unobtainable for many on account of its high price. The new Handbook contains Mr. Dykes' usual plea for an abatement of the overemphasis of the Bearded *Iris* section and a greater appreciation of the many other types. Mr. Dykes says that *Iris germanica* still has not been found wild anywhere. He mentions finding *Kochi* wild near Lake Como, and tells of a place in the Velebit Mountains in Croatia where forms of *pallida* and *variegata*

grow side by side, and many hybrids between them are found. This he says happens also in Tyrol.

Bulletins No. 20 and No. 21 have a series of interesting articles concerning the Irises to be found mentioned in old books on Botany. B. Y. Morrison reviews "The Iris of Gerard's Herball" and gives line drawings which are copies from the original text. In 1928 as Chairman of the Committee on Exchange of Rare Species, he states:

"After a fairly exhaustive survey of catalogues and advertisements in 1928, the would-be collector of Iris species in this country need not be too disconsolate. The following species were discovered and it is possible that some few may have been overlooked:

arenaria	hoogiana
aurea	hookeri (setosa)
bracteata	japonica
californica	japonica (Ledger's variety)
chrysofor	laevigata
chrysographes	laevigata alba
chrysophylla	laevigata albo-purpurea
cristata	longipetala
cristata alba	longipetala superba
cypriana	milesi
delavayi	minuta
dichotoma	missouriensis (and named
douglasiana	varieties, also as tolmieana)
ensata	monnieri
forrestii	monspur
fulva (cuprea)	ochroleuca (and varieties)
germanica	orientalis (and varieties)
gormani	persica
gracilipes	pseudodorus (and varieties)
graminea	pumila (and varieties)
guldenstadtiana (spuria)	purdyi
hartwegi	shrevei
hexagona (foliosa also under this name)	sibirica (and varieties)
	spuria (and varieties)

stolonifera	verna
susiana	versicolor
tectorum	watsoniana
tectorum alba	watti
tenax	wilsoni
tingitana (and varieties)	xiphioides (only as horti-
tricuspis	cultural varieties)
trojana	xiphium (only as horti-
unguicularis (as stylosa and	cultural varieties)
varieties)	

"From this list it can be seen that the Apogon section is fairly well represented and that the Evansias are well covered. The striking omissions are among the members of the Reticulata group, the Junos, the Reglias and the Oncocyclus. Who will make this introduction and dissemination a labor of love?"

Bulletin No. 31, reviews the March 1929 Addisonia which is given over to Iris collected by Dr. John H. Small. The illustrations are beautifully colored. This volume as well as other Addisonia numbers devoted to Iris were made available to our members at cost. Bulletin No. 47 has descriptions of a number of Dr. Small's Irises. Other Bulletins have references to the Journal of the New York Botanical Garden, Volume 30, No. 349, 5-10, January 1929, with notes on Iris diseases by Dr. Bernard D. Dodge; to foreign language articles on species (with translations); to Iris breeder records and to research in chromosomes, etc. In all no serious student of Iris botany could afford to omit study of the Society's contributions in this field.



Report No. 2Plant Breeding

In 1926 and again in 1927 the Society appropriated \$100 for research work on Japanese Iris and for breeding experiments with rare species at the Brooklyn Botanic Garden by Dr. George M. Reed and \$200 for research work on Sterility in Irises by Dr. A. B. Stout at the New York Botanical Garden. The Board at this time expressed the hope that this Society would continue such appropriations so that progressive work over a period of years might be initiated. Dr. A. E. Waller, Botanist of Ohio State University, had been appointed a Chairman of Scientific Committee and made some reports later. In 1927 also there was an appropriation of \$100 to Cornell University for study of Iris borer by Mr. Donald T. Ries. Bulletin No. 22 has a report on Sterility in Dwarf Bearded Iris by Robert A. Green.

Bulletin No. 27 contains a report of 1927 breeding experiments at the New York Botanical Garden by Clyde Chandler and Dr. A. B. Stout. This report covering eighteen pages deals largely with Beardless Iris, although a few crosses were made with some of the Crested Iris. The chief task was to cross *Iris fulva* with many of the northern species of the *Sibirica* species and *Laevigata* groups in the hope of producing plants with the red coloring of *fulva* which would be more hardy in northern sections. This report most certainly takes its place in research work done by the Society and should find a place in the permanent literature of the Iris. Many of the 395 pollinations attempted in the more than two thousand crosses, were new and it is quite natural therefore that the number of successful pollinations, 114, was comparatively small.

Bulletin No. 29 has an article on Chromosomes by A. E. Longley illustrated by some splendid plates. Mr. Shull also has an article on Root Growth of an Iris with illustrations showing different types at various dates.

Bulletin No. 31 has an eighteen page report on the breeding work with Irises at the New York Botanical Garden, written by Clyde Chandler, Katie C. Fitzpatrick and Dr. A. B. Stout. There are reports of seedlings grown, tables of pollinations and results. Like other articles in this series it is not of interest to the casual reader but must be regarded as a further contribution to the scientific study of Iris breeding.

Bulletin No. 33 has a fourteen page article by Dolores J. Fay, Clyde Chandler and A. B. Stout on the work at the New York Botanical Garden under the Iris Scholarship for 1929. The two problems especially studied were the hybridization of southern species especially with forms more hardy in the northern states, and second, efforts to obtain seedlings from cross-pollination between Japanese Irises and other types. There are also special studies made in the longevity of pollen in order that members might know how any pollen can be kept and how it can be shipped to a distance. Pollen of certain Irises was successfully kept for a year which should be encouraging to many breeders. Directions are given for handling and shipping. It is stated that about seventeen hundred seedlings obtained from breeding work in 1927 bloomed in July 1929.

Bulletin No. 34 has an article on Iris Breeding dealing particularly with the parentage of a number of Miss Sturtevant's

seedlings such as Shekinah, Sherbert and others and while short, is an important contribution to our knowledge of Iris breeding

Bulletin No. 42 has a note from Sir Mark Collett in England that with seeds not ripening well for lack of sun, stalks were cut and placed in bottles with fifty percent solution of sugar for three or four weeks with the result that one could not have asked for finer looking seeds.

Report No. 3Culture, Soils, Fertilizers, Pests.

Our first Bulletin contained twenty two pages of authoritative information from all parts of this country. Such a thing had never been attempted before in Irises and we feel proud in having produced what might be called a foundation stone for Iris culture in this Bulletin.

A special pamphlet issued in March, 1924, mentioned that Mr. Peter Bisset of the Department of Agriculture has recently suggested soaking seeds in acid for one month and then washing in cold water to break down the seed coat.

Bulletin No. 29 has a review of the Department of Agriculture's pamphlet "Production of Certain Iris Bulbs" by David Griffiths. It deals with the commercial production of bulbs which are of increasing importance for forcing. They are considered under five groups: Spanish Iris, Dutch Iris, *Iris filifolia*, *Iris tingitana* and English Iris. With the exception of *tingitana*, successes are reported from the whole length of the Pacific Coast, from Long Island, Virginia, Illinois, Michigan and Tennessee. Hope is held out that the English Iris will succeed in gardens throughout the northern tier of states when good bulbs which have not been injured in transit are given a faithful trial.

Bulletin No. 30 expresses doubts on the subject of the necessity for adding lime for Bearded Iris. The Society is to be commended in calling this matter to the attention of its members for nearly all books and writings have urged the necessity of lime.

There is a review also of Les Parfumes de France from Bevue Mensuelle, No. 63, Mai, 1928, Grasse, Paris. This French article contains a list of Irises and their use in perfumery and reviews botany and cultivation and goes deeply into the extraction of perfume, distillation, etc. *Iris pallida* is used for making orris root more than *Iris Florentine* at the present time.

Other reviews follow of the Bulletin of the Garden Club of America, September, 1928, with an article on Some of the Newer Irises, by Mrs. H. G. Lloyd; of the Bulletin of The Iris Society of England, July, 1928, containing articles on *Iris Culture*, *Iris Ricardi* as a Parent, American Irises by Mr. Mead and Mrs. Hires, and reports of the Trials at Wisley; of the Journal of the Royal Horticultural Society, Vol. LIII, . Bulletin No. 32 is largely given over to Japanese Iris. The leading article is written by Dr. George M. Reed and contains many notes of great value. Following this there is an article by Mrs. Reed on The Significance of Japanese Names for Iris, with translations of many of the better known names, as well as legendary significance in some of the names mentioned.

In Bulletin No. 38, is an article on relation between water loss and the size and form of flowers; Bulletin No. 39 are notes on Iris Behavior during the drought of 1930; Bulletin No. 49 has Stem Elongation Studies by Dr. A. E. Waller and Robert H. McCormick, and also a most useful calendar of Iris bloom in Nebraska. There is also a useful article on the new apogon hybrids of Mr. and Mrs. T. A. Washington, a short article on fertilizers, recommending ammonium sulphate and commercial fertilizers as being equally good with both

Bearded and Beardless Iris; and a short article on Genetics.

Bulletin No. 50 has notes on the soils of Florida and on Iris breeding of value to breeders. There are also notes on Iris species with splendid illustrations.

In any gardening operation the question of labels is always of interest. Many types of labels are on the market but the cheaper ones have plenty of faults and the best ones are expensive enough to discourage their use. In the Flower Grower of June, 1922, several types of zinc labels and of acid inks are mentioned. The following solution is recommended; copper subacetate one dram; ammonium chloride one dram; lamp black one half dram, water ten drams. This acid ink must be kept tightly corked to prevent evaporation. In using it an old gold fountain pen will be found useful for the steel pens I used were ruined by the acid.

The following notes on Insects and Diseases are taken from Bulletin No. 10:

*Macronoctua onusta*, the Iris Borer, must be hunted by hand. A small brown, night-flying moth lays its eggs in the leaves just before flowering time, or later, in early August. The larva hatches, and, as he eats his way down to the root, leaves a translucent slimy trail. At this stage he is easily seen and pinched but later in the root he may not be discovered until the clustered leaves fall apart and we discover that the entire body of the rhizome has been eaten away and the inch and a half pinkish-white caterpillar with a brown head has gone on into the soil to spend the winter.

Bacillus Omnivorus is a well-named, all-destructive soft rot with a most unpleasant smell. It is so frequently found in cabbages or root crops that old vegetable gardens are not desirable sites for Iris gardens. A healthy rhizome exposed to the sun is pretty resistant, but if it is softened by too much moisture or weakened by over-feeding it quickly succumbs. A bruised spot or the jointure of leaves or flowers stalk and root may become infected. The rot rapidly spreads, completely destroying the tissue as it goes, particularly in wet seasons, when the stem and much of the rhizome become a soft mush. This must be thoroughly cut and cleaned, the diseased parts burnt and the plant either taken up, or the earth cleared away so that it may be well disinfected. Permanganate of potash in a solution of 2 to 1,000, and corrosive sublimate 1 to 1,000 are effective, or a long exposure to full sunlight will often do the trick. It is well to remember that the rot is very infectious, refuse should be burnt and utensils sterilized, and also that it thrives in lime. Acidity may induce leaf spot but it reduces rot.

In long continued wet weather, the old lifeless part of a rhizome often becomes soft and rotten, the base of the flower stalk also leaves a scar on the rhizomes and in both cases we may have the appearance of a soft rot, but not its odor. Such natural sogginess may often give entrance to destructive bacteria but in itself, it is harmless.

Leaf Spot whether caused by *Heterosporium gracile* or by *Puccinia iridis* is rare in this country, probably because of our hot summer suns. If at all prevalent the remedy is to spray every three days with a fungicide like lime-sulphur.

Bulletin No. 11, May, 1924, contains a further note on the Iris Borer stating that the Moth emerges from the pupa in mid-September in northern New Jersey, deposits eggs at the base of the Iris foliage, that these eggs winter over and hatch early in May, the hatching period spreading over some days or weeks. The grub eats its way down through the leaf, reaching the rhizome by August, by which time it grows into a dirty white grub, perhaps two inches in length and as thick as a lead pencil.

For control of a few clumps the pinching of foliage when injury is noticed is practical, but in larger quantities burning over in March is recommended. This destroys the old foliage and the eggs as well. Clumps in borders of **other** perennials were burned in a similar way by making a wet circle around the plant with a watering pot. By this method there is no injury to any Irises except *Tectorum* and *gracilipes*.

Bulletin No. 17, notes that full information on the *Berbena* Bud Moth can be had in Bulletin 226, Superintendent of Documents, Washington, D. C.

Bulletin No. 26 has valuable articles on the Iris Borer by Harry F. Dietz and by J. Marion Shull. Mr. Dietz's article gives date for the emergence of the moth and localities where found during the present year, and makes suggestions of sprays and other method of combatting the insect. Included in this are some notes on parasites of which but little was known. Following these two articles is the report of studies of Donald T. Reese at Cornell in reference to Iris Borer, *Verbena* Moth and various bulb flies.



In the January, 1929, Bulletin there is a note on Iris Borers recommending cutting the foliage close in the fall and then spraying once in November and again in April with kerosene emulsion; one can fish soap to one gallon boiling water plus two gallons of kerosene diluted 1 to 20 in water. There are further notes on Iris Borer and Verbena Bud Moth. Maps are appended showing distribution of these insects and photographs show their exact appearance and the nature of their work. List is given of species which are most usually attacked and several sprays are suggested which may be of use as repellants. This article, which covers nineteen pages is by far the most detailed statement on this subject which had been published by the Society or elsewhere.

Bulletin No. 35, has notes on Iris Troubles by Dr. B. O. Dodge and Marjorie E. Smith. These are extracts of the February, 1930, Journal of the New York Botanical Garden. The article deals first with *Sclerotium Delphinii* which had been checked by soil sterilization and by dipping the plants in formaldehyde and Dip Dust. This was considered a success as there had been practically no losses in treated beds while the disease was most severe in untreated beds nearby. Bacterial Soft Rot, *Bacillus carotovorus* is also reported upon at some length and not only is the disease described but inoculation experiments are referred to and control by sterilization with formaldehyde and semosan or other mercuric compounds is mentioned. Damping off of seedlings is referred to as caused by the fungi, *Rhizoctonia Solani* Kuhn. This was controlled by thorough spraying of plants with Upsulum.

Among insects the aphid *Anuraphis Tulipae* is mentioned as having been controlled, this having required treatment with Black Leaf 40 and soap. Verbena Bud-Moth, *Olethreutes hebesana* is mentioned as feeding on seeds and having at least four generations a year. Several applications of Arsenate of Lead were recommended for this. Another insect attacking Iris seed was the Weevil, *Mononychus vulpeculus* which was present in a more limited way. The Florida red-scale of citrus *Chrusomphalus aonidum* was also mentioned as being present on Iris leaves. While injury was not considered serious it disfigures the leaves.

In 1930 is found the following: Here is an Iris Borer killer. Close up to the Iris plant or even on it, place tin can lid; on the lid place a heaping teaspoonful of Paracide (*Paradichlorobenzene*). Cover plant with a bucket or large can. Around the bottom pile a little earth to make can air-tight. Twenty-four hours later remove can and Paracide. The plant is withered, particularly on a hot day the blades will turn white from the heat, but fresh spikes will soon appear and the borer is dead. You can prove it by cutting open the rhizome on some cheap variety and there you will see the dead borer.

The October, 1931, Bulletin has the following note: A real cure for root rot in Irises seems to have been discovered. This is Cupro Jabonite, the trade name of a copper carbonate chemical compound used by western farmers for the treatment of seed wheat. Experiments in the application of this fungicide proved that sprinkling it over the affected rhizomes dried up the rot in the course of a day or two without the necessity of scraping out the diseased portions.