

Number 49

Autumn, 1992

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# Species Iris Group of North America

Autumn, 1992 — Number 49

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# Chairman's Message

—Colin Rigby—

**W**E WERE SADDENED by the sudden passing of Vice-Chairman Leland Welsh last spring. Lee was always there with his fresh ideas and sound suggestions. He is missed very much.

We wish to welcome Carla Lankow as Vice-Chairman and Janet Sacks as Treasurer of SIGNA. Our thanks to Carla and Jan for filling these two major spots in the SIGNA Executive. Bob Pries asked to be relieved of the duties of treasurer in order to devote time to awards and the species checklist now being compiled.

The American Iris Society recently had some changes made to its By-Laws and sent a ballot to its members to vote upon those changes. One item that raised a question with some people was: "Do you have to be a member of AIS in order to be a member of SIGNA?" The answer is no. SIGNA has two types of membership: "Regular Members," who are members of the American Iris Society, and "Associate Members." Associate Members are those members who receive all the privileges of regular membership, except that they shall have no administrative voice in the organization's affairs.

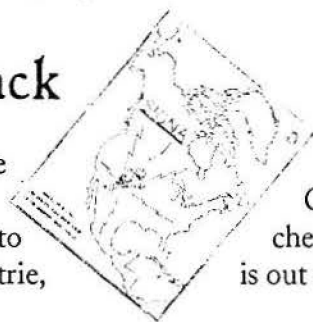
It has been an active year for SIGNA in many ways. Work progresses on the species checklist and our hat is off to the excellent crew working on this monumental task. Needless to say, several major problems have arisen in the course of this task and are being met with with great judgment

and resolution by the checklist committee. (Please note the information on how to register a species iris with the AIS Registrar elsewhere in this issue.) The checklist should be ready for publication sometime next year and we are assured it will be as complete and up-to-date as is possible. Connie Hansen is again serving as the Seed Exchange director and we ask you to send in your seed, cleaned and properly labeled, as soon as possible. The sooner she receives the seed, the quicker it is possible to issue the list. Thanks to all those who supply seed. The Exchange, in addition to being of tremendous service to iris plant growers everywhere, is a major source of SIGNA's operating income which enables us to publish our very fine semi-annual publication.

This brings us around to another point I would like to mention and that is membership. SIGNA has just over 700 members which makes it one of the largest Sections of the American Iris Society. We're rather proud of this but it could not be done without the cooperation and hard work of those involved. Florence, Helga, Dot, Louis and Alan, those people mentioned above, and the advisors who keep us on course, all help to make SIGNA the fine informational tool that it is. And of course, you the membership. We, like you, like to hear about success and failure, new ideas and the very exciting things happening with the species irises. Please keep in touch.

Back

Most issues, from Number 1 to the current, are available for \$2.00 each, which includes postage. Send orders to Publications Chairman, Alan McMurtrie,



Issues

22 Calderon Crescent, Willowdale, Ontario, Canada M2R 2E5. Please make checks payable to SIGNA. The Study Manual is out of print and no longer available.

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# Babiana Species

—Dr. Richard L. Doutt—

SIGNA editor, Louis T. Fry, properly focuses each issue on the species-rich genus *Iris*. However, he believes that some attention may also be given to other members of the Iris Family, Iridaceæ. So he invited me to edit a regular feature on non-Iris irids.

I accepted this responsibility in late August but the October 1 deadline did not give enough time to solicit articles for this new section. So I am writing the first of these pieces with the devout hope the members of SIGNA will submit a comment, short article, shared experience, or other appropriate note on non-Iris irids by the next publication deadline which is April 1, 1993.

There is no shortage of material for articles on non-Iris irids. From a global standpoint, Clive Innes in his 1985 book, *The World of Iridaceæ*, lists 100 genera of irids exclusive of the genus *Iris*.

While all the true species of *Iris* are native only to the northern Hemisphere, other irids are found throughout the world. They grow wild on every continent except Antarctica. For example, the small Cape Province of South Africa, only one-third the size of California, has 39 genera and 612 species of irids. Of course none of these are *Iris* for that genus does not occur in the southern Hemisphere.

For this initial feature let's discuss *Babiana*, just one of these South African irid genera. There are 36 species of *Babiana* in the Cape Flora and a total of 63 throughout South Africa.

Other than *Babiana* I am hard pressed to think of any plant genus that is named for its major herbivore. The pioneer Afrikaners observed baboons relishing the corms so they named these baboon flowers. Bright flower colors and pleated leaves are characteristic of *Babiana*. They are among the hardiest of Cape bulbs for they thrive

in impoverished soils yet are floriferous and multiply rapidly.

*Babiana* grow readily from their hard black seeds sown in autumn in deep pots in a sandy medium. Germination may occur in 18 days but 30 days is required for most species. Contractile roots pull the corms to a surprising depth. Most flower in their second season. *Babiana* are dormant during the summer when watering should be withheld, but they will survive some watering if they are in

well-drained soil. Certain species produce bulbils in the leaf axils and all *Babiana*

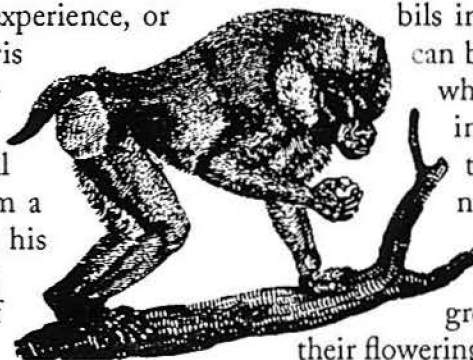
can be propagated from corm offsets which should be planted at least 4 inches (10 cm) deep. Although tolerant of poor soil, *Babiana* need good drainage in a sunny situation and flourish with liberal watering during their growing period from fall through

their flowering in spring.

As its name indicates *B. pygmæa* is a small, ground-hugging plant that bears large (3 inch, 8 cm) yellow flowers with a purple throat. It is ideal for small pots as is *B. ambigua* which is a small prolific plant reaching 4 inches (10 cm). The flowers are blue with basal white areas on the lower segments. It resembles *B. nana* which has a pinkish tinge to the flowers. Both *B. ambigua* and *B. nana* are sweetly scented.

A very striking species is *B. rubrocyanæa*, called the "wine cup

*Babiana stricta*, Pierre-Joseph Redouté



*Babiana*" because the cup-shaped blue flowers are dark blue with a red center, much like a blue wine glass containing burgundy. Taller species suited for many garden situations include *B. disticha* with light blue flowers, *B. pulchra* with dark blue flowers, and the eye-catcher *B. villosa* which has crimson flowers with black anthers. This species grows to 12 inches (30 cm) or more and naturalizes easily in my garden.

*Babiana* are undemanding Cape bulbs. The taller species are good garden plants and well suited for rock gardens. The low growing species are fine pot plants and can be left undisturbed for years.

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[Dr. Richard L. Doult is Professor Emeritus, University of California, Berkeley, where he taught entomology for 29 years. While at Berkeley he was a founder and the first president of the Sydney B. Mitchell Iris Society, whose members included some noted Irisarians including Professor E. O. Essig, who was a Dykes Medal winner. After retiring to Santa Barbara in 1975, he practiced environmental law for seven years as legal counsel for HDR, a nationwide engineering, architectural, and science firm. Later he became the entomologist for Santa Barbara County, and is now a Research Associate at the Santa Barbara Museum of Natural History and conducts research on endemic species of California's Northern Channel Islands, which he calls "our local Galapagos."

After a trip to South Africa in 1980 he began growing a large collection of bulbous flowers from the Cape Province and now makes these rare and unusual species available to other gardeners through a mail order enterprise, BioQuest International. He has written articles, given talks, and recently contracted a book manuscript about the Cape Bulbs with Timber Press, of Portland, Oregon; it is scheduled for publication in late 1993. Since many of these bulbs are in the



*Babiana rubrocyanea*; dramatic contrast of colors is not well-shown here. Fry photo.

*Iris* Family, Iridaceae, they will be appropriate subjects for the occasional columns on non-Iris irids.

BioQuest's catalogue, which lists many of the Cape Province bulbs, is normally priced at \$2.00, but Dr. Doult has generously volunteered to make a copy available free to anyone who mentions they are a member of SIGNA.

To support Dr. Doult in his rôle as the first of our Feature Editors, a new non-Iris Iridaceae robin will be formed. Those with a serious interest in or experience with these plants should contact SIGNA editor, Louis Fry, for further details. Articles, suggestions, questions, and requests for catalogues may be submitted to Dr. Richard L. Doult, 1781 Glen Oaks Drive, Santa Barbara, CA 93108.]



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# An Investigation into the Status of *Iris thompsonii* (Iridaceae)

—Carol A. Wilson,<sup>1</sup> Alfred Levinson,<sup>2</sup> and Richard Petersen<sup>1</sup>—  
<sup>1</sup>Department of Biology, <sup>2</sup>Department of Chemistry,  
Portland State University, Portland, OR 97207

## ABSTRACT

Within *Iris* series *Californicae*, experimental hybrids between species are readily produced and natural hybrids have been reported as common. *Iris thompsonii* from the northwestern slopes of the Klamath Mountains has been described as a natural hybrid between *I. douglasiana* and *I. innominata*. The purpose of this study was to investigate the relationships of these three species and in particular to determine the status of *I. thompsonii*. Methods used were discriminant and cluster analyses of morphological characters and a chemotaxonomic analysis of flavonoid pigments using thin layer chromatography. The thirteen populations studied were found to represent three species: *I. douglasiana*, *I. innominata*, and *I. thompsonii*. This study does not support the current taxonomy for *I. thompsonii* that places this taxon within *I. innominata* as a color form or occasional hybrid between *I. innominata* and *I. douglasiana*.

The series *Californicae* (Diels) G. Lawr. in the genus *Iris* (Iridaceae) comprises approximately 16 closely related taxa that are thought to form a natural group. These taxa are distributed along the Pacific Coast in Washington, Oregon, and California. Numerous studies (e.g., Foster 1937; Lenz 1958; Clarkson 1959; Carter and Brehm 1969) have cited the occurrence of intraspecific variation and interspecific hybridization as sources of confusion in the systematics of the series.

The taxa under consideration in this study, *I. douglasiana* Herbert, *I. innominata* L. Henderson, and *I. thompsonii* R. Foster, are found in the Klamath Mountains of southwestern Oregon and northern California. A major serpentine soil area occupies much of the study site. Serpentine areas are characterized by infertile, sparsely vegetated areas and species rich, endemic floras. Speciation in serpentine floras is thought to result from edaphic factors, specifically a combination of heavy metal toxicity and low nutrient levels (Kruckenberg 1954, 1986; Walker 1954). The three species occupy different habitats within this region. *Iris douglasiana* is typically found on grassy headlands along the coast, rarely more than two kilometers inland. *Iris innominata* inhabits inland rocky mountainous sites with sparse vegetation. *Iris thompsonii* is also an inland species but occurs on less sparse sites where a grass understory is generally present.

The series *Californicae* is often separated into three groups based on perianth tube length. The intermediate perianth tube group consists of only these three species. *Iris douglasiana* is easily recognized by its large stature, wide leaves, and inflorescences with several flowers. Differences between *I. innominata* and *I. thompsonii* are less obvious and have led to some controversy. Both species are rather small with relatively narrow leaves and one (or sometimes two in *I. thompsonii*) small flowers. Flower color in all three species has been reported

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to be variable. The most recent studies of the taxonomic relationships of the species did not lead to a consensus. Lenz (1958, 1959a) recognized *I. douglasiana* and *I. innominata* but retained *I. thompsonii* within *I. innominata*, considering some populations to be a hybrid between the two species and others to represent a color form of *I. innominata*. Clarkson (1962) retained *I. thompsonii* as a separate species although he considered it a probable hybrid between *I. douglasiana* and *I. innominata*. The purpose of this study was to investigate the status of these three species—within their area of sympatry.

Numerical analyses of selected characters and flavonoid studies were undertaken to: 1) determine what taxa are represented by the populations studied; 2) evaluate the relative amount of intra- and inter-specific variation present; and 3) investigate the possible hybrid origin of *I. thompsonii*.

## Methods

Thirteen populations (Table 1, Fig. 1) representing the range in which the three species can be found sympatrically were chosen as study sites. All of the study populations are located in southwestern Oregon except the Smith River population from adjacent Del Norte County, California. *Iris thompsonii* is known from just south of Powers in Coos County, Ore-

TABLE 1. COLLECTION SITE DATA FOR THIRTEEN POPULATIONS OF *Iris* SPECIES FROM SOUTHWESTERN OREGON AND NORTHERN CALIFORNIA (Fig. 1). <sup>1</sup>Forest Service Rd 333 is the road between Agness and Powers. <sup>2</sup>Forest Service Rd 325 is the road between 333 and Humbug Mountain State Park.

Population	Collection data
Daphne Grove	OR: Coos Co., 2.4 mi S of Daphne Grove Campground on Rd 333 <sup>1</sup>
Iron Mountain I	OR: Curry Co., 0.5 mi S of county line on Rd 333.
Road 333	OR: Curry Co., 5.1 mi S of county line on Rd 333.
Road 3400	OR: Curry Co., 450 yd. E along rd on N bank of Shasta Coasta Cr.
Road 3406	OR: Curry Co., 0.8 mi E along rd. on N bank of South Cr.
Cape Blanco	OR: Curry Co., Cape Blanco Park.
Iron Mountain II	OR: Curry Co., 11 mi W of junction with Rd 333 on Rd 325 <sup>2</sup> .
Champion Park	OR: Curry Co., roadbank at Champion Park.
Meyers Creek	OR: Curry Co., where Meyers Cr. crosses U.S. 101.
Carpenterville	OR: Curry Co., 8.1 mi N of U.S. 101 on Carpenterville loop.
Snaketooth	OR: Curry Co., 19.5 mi E of U.S. 101 along rd following the main fork of the Chetco R.
Chetco River	OR: Curry Co., 4 mi E of U.S. 101 along rd on N bank of Chetco R.
Smith River	CA: Del Norte Co., Jedediah Smith State Park.

gon, southward into northern Del Norte County, California. The range of *I. innominata* is entirely within Oregon in the northern portion of the study area from just west of Iron Mountain in Curry County, Oregon, eastward to Wolf Creek in Douglas County. *Iris douglasiana* is found along the coast from Coos Bay in Coos County south to Santa Barbara County, California. The three species are sympatric in the northern part of the study area to the west and to the south of Iron Mountain. *Iris thompsonii* and *I. douglasiana* are also sympatric in the southern portion of the study area along the Rogue and Smith rivers.

*Numerical Studies.* Floral and vegetative parts were collected

from 10 to 25 individuals per population during the years of 1981, 1982, 1984, 1985, 1987, and 1988. Measurements taken were: stem length, number of cauline leaves, leaf width, number of flowers per inflorescence, bract length, bract width, petal length, petal width, sepal length, sepal width, stigma length, stigma width, stigma lobe length, peduncle length, and perianth tube length. A qualitative evaluation of flower color also was recorded.

Cluster analysis was employed using a modification of Hartigan's K-Means program. Individual plants were used as operational taxonomic units (OTU's) and a total data set of 207 OTU's were analyzed. The program executed ten inter-

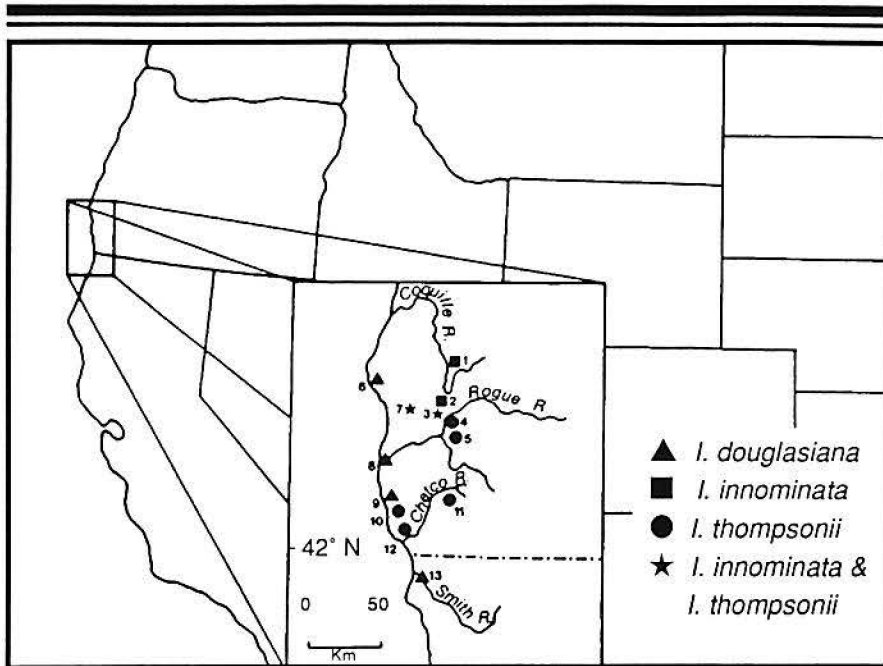


FIG. 1. Study populations of three *Iris* species from southwestern Oregon and northern California. 1. Daphne Grove. 2. Iron Mountain I. 3. Road 333. 4. Road 3400. 5. Road 3406. 6. Cape Blanco. 7. Iron Mountain II. 8. Champion Park. 9. Meyers Creek. 10. Carpenterville. 11. Snaketooth Road. 12. Chetco River. 13. Smith River.

nal iterations and computed a maximum of ten clusters using zero as a starting point. Flower color was entered as ordinal data from 0 to 5 for yellow (white to yellow) and purple (white to purple). A discriminant analysis of the data set was generated by use of the SYSTAT DISCRIM program. Finally a tree diagram illustrating the relationships of the populations studied was generated using euclidean distances and single linkage methods (SYSTAT JOIN). Mean population values were entered for each character.

**Flavonoid Studies.** Petals, sepals, and stigmas from 10–20 individuals were collected from ten of the study populations and flavonoids were extracted in acidified methanol for 36–48 hours under refrigeration (Parks 1965). Approximately 20  $\mu\text{m}$  of extract was applied to Analtech Avicel F cellulose thin layer plates for simultaneous development. TBA was used for both directions (6:2:1 and 3:1:1 respectively). The dried plates were observed under long- and shortwave UV light and marked for pigment spots. Spectral data of pigment spots were obtained by removing the spot from the plate and extracting the pigment in acidified methanol. A Beckman DU-7 spectrophotometer was used for gathering spectral data.

## Results

**Numerical Studies.** Three clusters were found to be optimum, as the mean distance to cluster centers decreased by 42.3% with the formation of a third cluster but the mean distance only decreased by 2.0% when a fourth cluster was formed. *Iris douglasiana* was represented by Cape Blanco, Meyers Creek, Smith River, and Champion Park populations. Daphne Grove and Iron Mountain I populations formed a cluster representing *Iris innominata*. Carpenterville, Chetco River, Snaketooth Road, Road 3400, and Road 3406 formed the third cluster which identifies populations of *I. thompsonii*. Iron Mountain II and Road 333 represent mixed populations with members classified as *I. innominata* or *I. thompsonii*. *Iris innominata* has a more compact cluster (mean distance to cluster center 0.33), indicating that this species is more homogeneous than *I. douglasiana* (mean distance 0.56) and *I. thompsonii* (mean distance 0.45). Mean character values ( $\pm$  SE) for the three species are given in Table 2.

The discriminant analysis verified the classification of the thirteen populations into three groups (Fig. 2). Again, Iron Mt. II and Road 333 were found to be mixed populations with both *I. innominata* and *I. thompsonii* present. The classification of the thirteen populations into three groups was found to be highly

TABLE 2. MEAN VALUES ( $\pm$  SE) OF NUMERICAL CHARACTERS AND RATIOS FOR THREE *Iris* SPECIES FROM SOUTHWESTERN OREGON AND NORTHERN CALIFORNIA. <sup>1</sup>Measurements are in mm. <sup>2</sup>Not used in numerical programs

	<i>I. douglasiana</i>	<i>I. innominata</i>	<i>I. thompsonii</i>
Characters <sup>1</sup>			
Yellow flowers	0.1 $\pm$ 0.06	4.9 $\pm$ 0.03	0.0 $\pm$ 0.03
Purple flowers	4.7 $\pm$ 0.09	0.0 $\pm$ 0.00	4.7 $\pm$ 0.10
Number of leaves	1.9 $\pm$ 0.07	2.1 $\pm$ 0.08	2.1 $\pm$ 0.11
Leaf width	1.3 $\pm$ 0.02	0.5 $\pm$ 0.01	0.4 $\pm$ 0.00
Number of flowers	3.3 $\pm$ 0.89	1.0 $\pm$ 0.00	1.1 $\pm$ 0.05
Stem length <sup>2</sup>	19.0 $\pm$ 1.11	12.6 $\pm$ 0.58	16.5 $\pm$ 0.81
Bract length	7.7 $\pm$ 0.15	4.2 $\pm$ 0.08	4.5 $\pm$ 0.09
Bract width	1.7 $\pm$ 0.03	1.1 $\pm$ 0.02	1.2 $\pm$ 0.04
Petal length	5.7 $\pm$ 0.08	4.3 $\pm$ 0.05	4.7 $\pm$ 0.08
Petal width	1.4 $\pm$ 0.03	1.0 $\pm$ 0.01	1.0 $\pm$ 0.02
Sepal length	6.3 $\pm$ 0.09	4.9 $\pm$ 0.06	5.2 $\pm$ 0.10
Sepal width	2.4 $\pm$ 0.05	1.9 $\pm$ 0.03	2.0 $\pm$ 0.05
Stigma length	4.3 $\pm$ 0.06	3.1 $\pm$ 0.03	3.4 $\pm$ 0.05
Stigma width	1.3 $\pm$ 0.02	1.1 $\pm$ 0.02	1.1 $\pm$ 0.04
Stigma lobe length	1.3 $\pm$ 0.02	1.1 $\pm$ 0.00	1.2 $\pm$ 0.01
Peduncle length	2.8 $\pm$ 0.12	0.8 $\pm$ 0.05	0.8 $\pm$ 0.05
Perianth tube length	1.6 $\pm$ 0.02	2.1 $\pm$ 0.03	2.4 $\pm$ 0.05
Ratios <sup>2</sup>			
Bract length/width	4.7 $\pm$ 0.13	3.7 $\pm$ 0.09	3.8 $\pm$ 0.13
Petal length/width	4.3 $\pm$ 0.10	4.4 $\pm$ 0.06	4.8 $\pm$ 0.11
Sepal length/width	2.7 $\pm$ 0.03	2.6 $\pm$ 0.03	2.7 $\pm$ 0.05
Stigma length/width	3.6 $\pm$ 0.07	2.9 $\pm$ 0.06	3.2 $\pm$ 0.09

significant (F-statistic 336.9). The functions computed were found to be closely correlated to the groups discriminated as shown by the large values of the canonical correlations (0.988 and 0.976). Discriminant values show patterns similar to results from the cluster analysis, with *I. innominata* having the smallest range for discriminant values. Two populations, Snaketooth Road and Champion Park, had OTU's that were some distance from the group center (Fig. 2, a and b, respectively). These OTU's are considered to be variants within these populations. These three OTU's are not candidates for current hybridization, as the two populations from which they were collected are not presently sympatric with populations of other species and past hybridizations are not suspected as the other OTU's analyzed from the populations do not show evidence of intermediate character states (27 and 17 OTU's were analyzed from the Snaketooth and Champion Park populations, respectively).

Figure 3 illustrates the relationships of the populations studied. Based on discriminant and clustering data, the Iron Mt. and Rd. 333 populations have been subdivided into Iron Mt. II-i, Iron Mt. II-t, Road 333-i, and Road 333-t indicating the species present.

*Flavonoid Studies.* Fourteen flavonoid spots that are characteristic for the three species were resolved from the populations studied (Table 3). Four flavonoids are common to all three species. Pigment spots D5-D7 were found only in populations of *I. douglasiana*; I3, I4, and I7 in populations of *I. innominata*; and T1 and T2 in *I. thompsonii*. Two flavonoid spots (I1 and Y2) were found in populations of *I. innominata* and *I. thompsonii* but not in populations of *I. douglasiana*. Several additional flavonoid spots were also found in one or sometimes two populations of a taxon but are not considered here as they contribute no additional information. As indicated in Table 3, Champion Park did not contain two of the flavonoid spots that were present in other *I. douglasiana* populations studied.

## Discussion

Foster (1937) recognized three species in his survey and cited differences in flower color, perianth tube length, shape of perianth and spathes (bracts), and nature of cauline leaves as support for the recognition of *I. thompsonii* as a species separate from *I. innominata*. He indicated that the perianth tube of *I. thompsonii* was shorter than that of *I. innominata*. During this study it was determined that the perianth tube of *I. thompsonii* was longer than that of *I. innominata* and *I. douglasiana*.



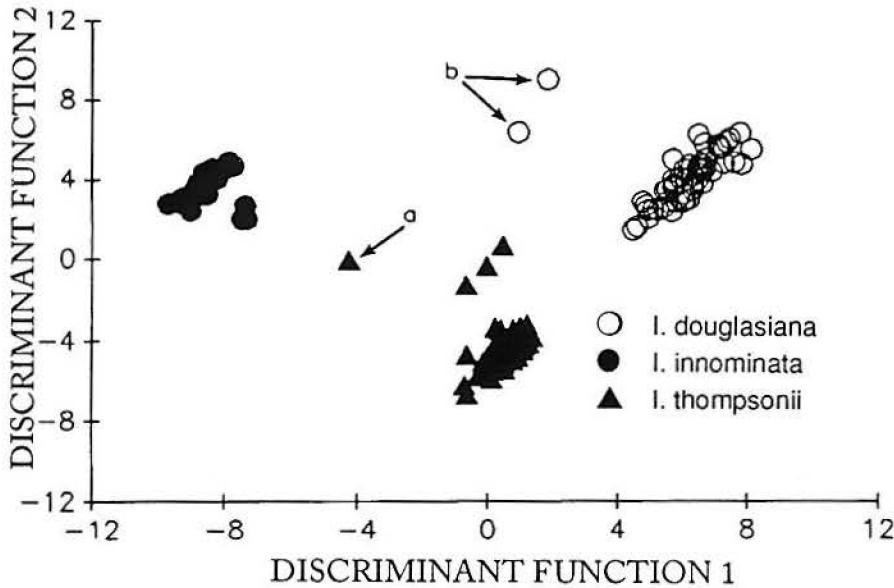


FIG. 2. Separation of three species of *Iris* from southwestern Oregon and northern California using SYSTAT DISCRIM. a. OTU from Snaketooth Road. b. OTU's from Champion Park.

Foster's description was based on one herbarium specimen, which may account for the discrepancy between this study and his findings. During this study the petals, sepals, and stigmas of *I. thompsonii* were found to be longer relative to their width when compared to *I. innominata* (Table 2), supporting Foster's assertion that differences in perianth shape occur. Lenz (1958), in his revision of the Pacific Coast iris, considered *I. douglasiana* and *I. innominata* to be species, but proposed that *I. thompsonii* be retained within the yellow-flowered *I. innominata*. He considered the cream to purple *I. thompsonii* to be a color form or in some populations a hybrid between this species and the purple-flowered *I. douglasiana*. Clarkson (1962) concluded that *I. thompsonii* was of hybrid origin and occupied a habitat intermediate to *I. douglasiana* and *I. innominata*. He found that *I. innominata* was restricted to serpentine sites whereas *I. douglasiana* was found on non-serpentine sites. He postulated that *I. thompsonii* was able to colonize sites intermediate to the habitats of the parental species. His study suggested that *I. thompsonii* should be recognized as a separate taxon although he did not favor species status for any of the three taxa. Clarkson had earlier proposed reducing all of the six Oregon members of the series to subspecific rank under *I. tenax*, the most widespread of the Oregon species (Clarkson 1959). He based this reduction in status on lack of "cytological barriers" and the presence of natural hybrids.

His taxonomic treatment has not been generally accepted.

During field work it was found that *I. douglasiana* is restricted to a narrow band within 2 kilometers of the ocean (Fig. 1), usually on grassy headlands and in pastures. It is associated with well developed soils at most sites (the Meyers Creek population is adjacent to a large serpentine outcrop). *Iris innominata* was found to have a limited distribution in the northern portion of the study area. It occurred at higher elevations on rocky, sparsely vegetated sites. A greater portion of the study area was occupied by *I. thompsonii*. It was found in light shade on both grassy and gravelly sites. The three species are commonly found along roadsides, possibly because of the openness of such habitats. Although soil type was not ascertained during this study, observation of the soils and associated communities generally supports Clarkson's opinion that *I. innominata* is found on serpentine sites, *I. douglasiana* is found on non-serpentine sites, and *I. thompsonii* occupies intermediate sites.

Numerical data indicate that *I. innominata* is the most homogeneous species, *I. douglasiana* is the most variable of the species, and *I. thompsonii* has an intermediate level of variability. The level of variation is expressed both overall (Fig. 2 and average distance-to-cluster center) and in individual characters (Table 2) for the three species. Variation



in flower color has been problematic in the taxonomy of these species (Lenz 1958, 1959a; Clarkson 1959). In the present study, it was found that *I. innominata* has butter yellow flowers and shows little variation in flower color, whereas both *I. thompsonii* and *I. douglasiana* (mainly purple-flowered species) show variation in flower color. Plants with white, cream, grey, red, blue, and lavender flowers occur in some populations of *I. thompsonii* whereas plants with cream, blue, and lavender flowers occur in some *I. douglasiana* populations.

Hybridization among members of the series *Californicae* has been cited by several workers. Foster (1937) in his survey of the North American species of *Iris* cited the importance of crossing on speciation within the group. He suggested that the series is composed of several species-complexes. He considered *I. innominata* and *I. thompsonii* to be clearly allied and possibly best placed in a complex with *I. douglasiana*, *I. bracteata*, and *I. purdyi*. Due to geographical and morphological considerations, he did not feel that such a complex could be clearly delineated. Smith and Clarkson (1956) examined cytology and embryo development in artificial crosses between species within the series. They found that fertile hybrids were produced between all crosses except *I. tenuis*. *Iris tenuis* has been transferred to the subsection *Evansia* (Lenz 1959b) largely

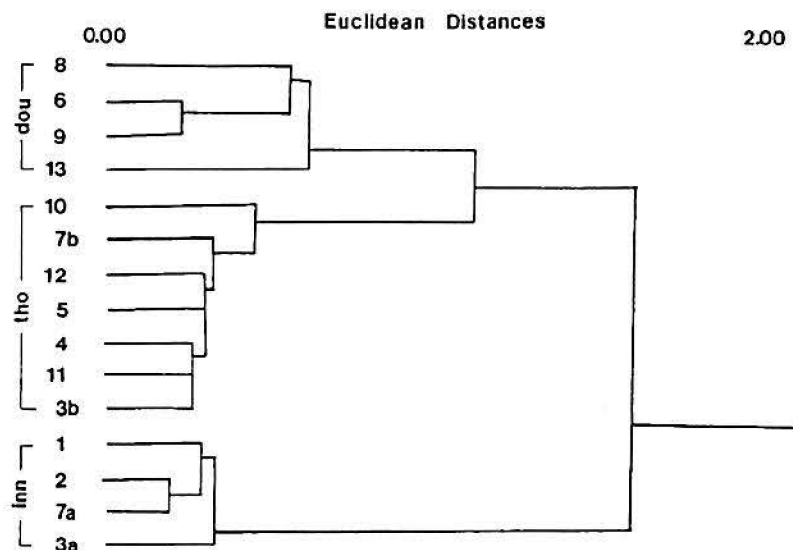


FIG. 3. Tree diagram of three *Iris* species from southwestern Oregon and northern California using morphological characters and the SYSTAT JOIN algorithm. 1. Daphne Grove. 2. Iron Mountain I. 3a. Road 333-i. 3b. Road 333-t. 4. Road 3400. 5. Road 3406. 6. Cape Blanco. 7a. Iron Mountain II-i. 7b. Iron Mountain II-t. 8. Champion Park. 9. Meyers Creek. 10. Carperterville. 11. Snaketooth Road. 12. Chetco River. 13. Smith River.

due to chromosome studies (*I. tenuis* has  $2n = 28$  chromosome numbers whereas all of the *Californicae* are uniformly  $2n = 40$ ). Morphological characters (Lenz 1959a; Clarkson 1959, 1962; Clarkson and Thompson 1961) and chemical and morphological characters (Carter and Brehm 1969) have been analyzed in naturally occurring hybrids within the series. These studies established that fertile hybrids were found in nature and that hybrids were intermediate except in flower color. The studies by Lenz, Clarkson, and Clarkson and Thompson included *I. innominata*, *I. douglasiana*, and *I. thompsonii*. Each of these studies concluded, based on the intermediate morphology and variable flower color, that *I. thompsonii* was a probable hybrid of *I. douglasiana* and *I. innominata*.

The present study does not provide clear support for a hybrid origin for *I. thompsonii*. In most characters it is intermediate to the putative parents. However, it is smaller in leaf width and has a longer perianth tube than either parent (Table 2). Perianth tube length was found to be 150% as long as in *I. douglasiana* and 114% as long as in *I. innominata*. Perianth tube length is considered important in the taxonomy of the series. The series is often subdivided into species with long

TABLE 3. TAXONOMIC DISTRIBUTION OF FLAVONOID SPOTS IN FLORAL PARTS OF THREE *Iris* SPECIES FROM SOUTHWESTERN OREGON AND NORTHERN CALIFORNIA. 'Champion Park population lacked pigment spots D5 and D6.

Species	Flavonoid spots													
	D1	D2	D3	D4	D5	D6	D7	II	I3	I4	I7	Y2	T1	T2
<i>I. innominata</i>	X	X	X	X	-	-	-	X	X	X	X	X	-	-
<i>I. douglasiana</i> '	X	X	X	X	X	X	X	-	-	-	-	-	-	-
<i>I. thompsonii</i>	X	X	X	X	-	-	-	X	-	-	-	X	X	X

(greater than three cm), short (less than one cm), and intermediate (1.5–2.5 cm) perianth tubes. The three species investigated in this study consist of the entire intermediate group.

Results from numerical methods placed *I. thompsonii* closest to *I. douglasiana* (Figs. 2 and 3). Flavonoid data indicate that it may be close to *I. innominata*, as it shares two flavonoid pigments with that species that are not found in *I. douglasiana* (Table 3). The analysis of flavonoids for a diploid hybrid is predicted to result in a pigment profile intermediate to the two parents where pigments common to both parents would be present but not all pigments would be represented. Such profiles have been well documented in natural hybrids of the genus *Baptisia* and summarized by Alston (1967). In the series *Californicae*, intermediate flavonoid profiles have been documented for natural hybrids of *I. tenax* and *I. chrysophylla* (Carter and Brehm 1969). If *I. thompsonii* is of hybrid origin, sufficient time may have elapsed for the development of a unique flavonoid pattern.

Although the potential for hybridization has been demonstrated by earlier studies (Smith and Clarkson 1956), no evidence of recent hybridization was found. In populations where the two species were found growing together (Iron Mt. II and Road 333), intermediate plants were not found. Hybridization events may be rare or gene flow may not be facilitated between hybrids and other individuals. Differences were found in phenology, with *I. thompsonii* populations blooming generally in April and May, *I. innominata* blooming in late May and June, and *I. douglasiana* blooming in June and July. Differences in habitat preferences and perianth tube length have been discussed above. These factors may also serve to reduce gene flow among the species.

In summary, this study found that three species are present within the study area: *I. douglasiana*, *I. innominata*, and *I. thompsonii*. Of these three species, the yellow-flowered *I. innominata* is the most homogeneous species and is limited in distribution. Purple-flowered *I. douglasiana* and *I. thompsonii* are more variable both in flower color and other characters. Although neither of these would be considered a widespread species, both have larger distributions than *I. innominata*. The larger overall size and greater number of flowers per inflorescence

easily distinguishes *I. douglasiana* from *I. innominata* and *I. thompsonii*. The purple flowers and longer perianth tube, bracts, and perianth parts distinguish *I. thompsonii* from *I. innominata* (Table 2). Differences in inter-specific variation were not demonstrated. Numerical data indicate that *I. douglasiana* and *I. thompsonii* are more closely allied than *I. innominata* is to either of the two species. However, flavonoid data argue for a closer relationship between *I. innominata* and *I. thompsonii*. Although clearly *I. thompsonii* should not be considered a color variant of *I. innominata* or an occasionally occurring hybrid between *I. douglasiana* and *I. innominata*, the origin of the species is more difficult to determine. The morphological and flavonoid data do not support the currently accepted hypothesis of a recent hybrid origin for the species, although speciation following a hybrid event is a possibility. The origin of *I. thompsonii* may be resolved with further studies involving different techniques and study of other members within the series.

## Acknowledgements

This paper is dedicated to the memory of Q. D. Clarkson, who encouraged the initiation of this project. A grant from the Portland State University Research and Publications Committee provided partial funding for the UV spectral analysis.

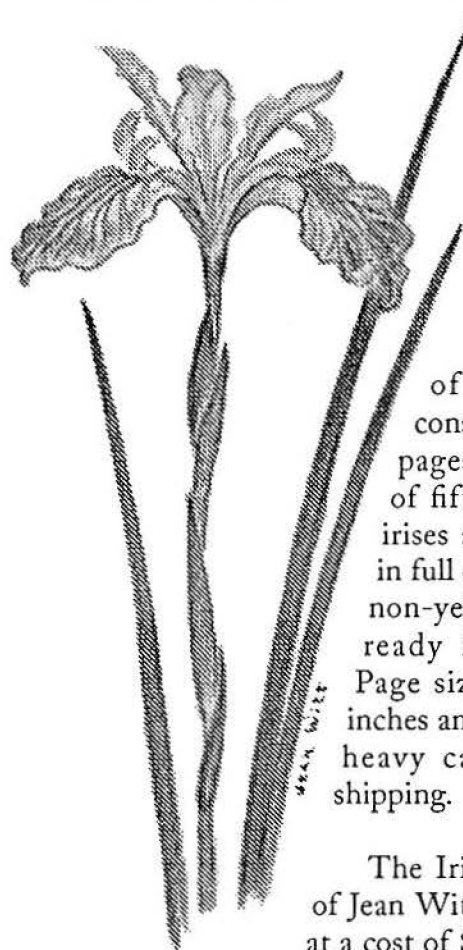
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## Currently Available: The Iris Watercolors of Jean Witt

Jean Witt is a botanist, gardener, and artist who has made a permanent record with brush and pen of some of her most beautiful and rare irises. All the paintings were made from life of irises raised in the Seattle area. Mrs. Witt's sketches and



*Iris innominata*

drawings have appeared in *SIGNA*, *The World of Irises*, and other publications.

The full set of watercolors consists of twelve pages with a total of fifteen different irises and is printed in full color on heavy non-yellowing paper ready for framing. Page size is 8½ x 11 inches and is backed by heavy cardboard for shipping.

The Iris Watercolors of Jean Witt are available at a cost of \$10.00 per set, postpaid. For overseas airmail add \$2.00 (US) for each copy. Make check or money order payable to *SIGNA* and send to:

*SIGNA*, 2087 Curtis Drive,  
Penngrove, CA 94951



## *Iris wattii* at last

—Elaine Hulbert—

**I**N SIGNA 38 I wrote in a state of some confusion about "*Iris confusa*," a plant I had received from East Germany which had proved to be readily self-fertilized and was giving seedlings which in turn were self-fertile. There was no reason to believe at that time that *I. confusa* was not a good and fertile species, but other plants I had under that name did not set seed to their own pollen when I tried it, and indeed there seemed to be little *confusa* seed available anywhere. The East German plant, which I called ICS or 'Isis,' really looked a lot different too from my imported English *confusa*.

But knowing no better I sent seed to the SIGNA exchange as *confusa*, and a few people have raised plants from it. Now I am certain that 'Isis' is actually *wattii*, and I suspect it may be the plant Dr. Jack Ellis has, nicknamed 'Nova' and now identified as *I. wattii*. It has a tall slender all-green cane, blooms with the other large crested evansias or a little later, and produces large nearly-all-white ruffled and fringed flowers which on my plants are always fewer and more top-bunched than those on the other evansia favorites. Its outstanding quality is its reliable response to its own pollen, forming large well-filled capsules.

The only other plant in the *confusa-japonica-wattii* group that seems to be as readily self-fertile is a light blue-violet form otherwise identical, which I raised from BIS seed labeled *wattii*. Dr. Ellis has plants of the same description, and I think the BIS seed donated by Kew Gardens may have originated with him.

There would be little point in crossing these two in my greenhouse—'Isis' and 'Biswat'—since both will set seed to almost any iris in the tender evansia group.

I can't help thinking after years of experimenting that *wattii*, which was for so long a question mark, is now established as the only "good" species in the lot, with neither *japonica* nor *confusa* on record as producing identical offspring from their own pollen.

So my experience has been the opposite of Dykes', with *confusa* reverting to *wattii* in my records, and I hope anybody raising plants from my *confusa* seed will note the change.

The plant widely circulated as *wattii* for the last several decades can be traced I think to Major L. Johnson's collection from Yunnan in 1931, which though growing near to the site of the collection(s) of genuine *wattii* and perhaps even growing in a patch of *wattii* was almost

certainly hybrid. Major Johnson picked an excellent plant, on the basis of its appearance, he tells us, and maybe for its uncommon good health, which it maintains throughout very wide travels through many countries in two hemispheres. An Australian nursery sent me 'Sylvia,' said to be Johnson's *wattii*, and I had more than one from the West Coast that certainly corresponded very closely. Its cane is shorter and much thicker, with shorter internodes, and it has a purplish color at all times. When its bloomstalk rises it may overtop *wattii*'s by a considerable amount, and its pale blue-violet flowers are produced more lavishly. It has never been fertilized I believe by its own pollen.

But it is a remarkable parent just the same. For Jean Stevens it produced the hybrid 'Queen's Grace' by pollen of *I. tectorum*. For Frances Love 'Sylvia' produced 'Honiana' by *tectorum* pollen. An unnamed Stevens plant called 'Question Mark' by its new owner Revie Harvey has produced several interesting hybrids including a unique wide cross with *I. milesii*. I don't think it would be a rash conclusion that the pod parent in all these cases is the robust, persistent, versatile Johnson clone.

Although Johnson did not mention so far as I know finding seed on the irises from which he



made his collection, it would not disprove its hybrid nature in any case, since all these big tender evansia hybrids so widespread in Western China sprang up, to begin with, near a species parent and then took off to complicate their kind over a quite a wide area.

A collection of undoubted *wattii* (seed only, I believe) was made by Frank Kingdon-Ward in the same year Major Johnson collected his plant, in Upper Burma where there is considerable similarity in flora and growing conditions to Yunnan. Apparently seedlings from Kingdon-Ward's 9357 did not perpetuate a race of irises comparable to Johnson's long-runner. Their species identity may have had something to do with this, as I and others have observed: 'Isis' and 'Biswat' tend to decline after fulfilling their role as parents.

With *wattii* nailed down it remains for some one of us to identify a true species *japonica*, which confers such desirable qualities on its hybrids, being smaller, hardier and more decorative, even, than the bigger tender evansias. And more confirmation of the species status of *confusa* would be a good thing. The Chengdu iris has been declared a species and alternatively a hybrid by growers who know much more about it than I do. I have only bloomed it once, after Jean Witt sent me a division. Last year I raised a crop of seedlings from an open-

pollinated capsule of 'Chengdu' sent to me by Colin Rigby. The seeds germinated at intervals, while a pot of 'Ibis' (which is 'Isis' selfed) seedlings kept beside it germinated all at once. The maturing 'Chengdu' seedlings have some of them the look of the pod parent, but others are stockier. The fact remains that 'Chengdu' (the collected plant) has a character of its own, and does not show obvious hybrid qualities.

As a sort of footnote I'll tell about 'False Isis' which was shown by Barbara Schmeider on slides contributed by Darrel Probst at the Atlanta Convention. This was a seedling from 'Isis' open-pollinated, which I kept because it was to my eye all *wattii* in appearance, though somewhat earlier-blooming and certainly more persistent. It refused its own pollen, however, over and over again through many attempts in 1990 and 1991, though it made capsules when fertilized by plants I received as 'Darjeeling' and 'Valley Blue'. It stays with me because it never seems to want to rot in the summer or abort its buds in early spring, unlike 'Isis', 'Ibis' and 'Biswat'. It pays to be a hybrid! Because it must be that, though its unknown pollen parent was certainly able to contribute a good many *wattii* genes.

[Even a new editor knows Elaine Hulbert needs no introduction to SIGNA readers. See the next column for an announcement.]

## Forthcoming Symposium on Cultivating Evansias

THE CRESTED IRISES have great attractions, and are adaptable to many styles of cultivation. But there are some rather important differences among the races, corresponding to the two great centers of distribution in western China and North America. We usually speak of the tender ones and the hardy ones, though there are regions in the US where the former grow well and the latter do not thrive.

For the large tender evansias we would welcome some accounts of experiences with year-round pot culture, winter-time pot culture, and outdoor culture. For *Ii. cristata* and *tenuis* we need suggestions for maintaining them outside their native regions, and for raising them from seed.

A short but very full treatment of evansia culture by Jean Stevens appears in SIGNA 38, but this is for New Zealand growers. American growers need input from different climate zones for success with the different crested species. If you have any tips, please send them to Elaine Hulbert (address on masthead) for a symposium to appear in SIGNA 50 or some other forthcoming issue of SIGNA.

## A New Hybrid Strain

—Monique Dumas-Quesnel and Tony Huber —  
(Press Releases of W.H. Perron & Co. Ltd.)

June 26, 1992—A new hybrid iris was introduced today at the Montréal Botanical Gardens. This is, in fact, a world premiere since *Iris ×versata*, known as “the iris with an oriental touch,” is the product of a cross between *Iris versicolor*, found in many regions of Quebec, and the Japanese Iris (*Iris ensata*) which had never previously been successfully obtained.

This new hybrid was created by W.H. Perron & Co. Ltd. with the assistance of the Institut de Recherches en Biologie Végétale and the Montréal Botanical Gardens.

As Mr. Pierre Bourque, director of the Botanical Gardens, stated, “with achievements such as these, the ornamental horticulture industry of Quebec is carving out an enviable position for itself on the international scene, through the introduction of a new quality product of superior quality.”

This new hybrid was developed through the *Iris versicolor* development programme initiated in 1987 by the Research department of W.H. Perron & Co. Ltd.

The National Research Council of Canada has provided the necessary financial support to the programme, which is aimed at developing the horticultural potential of *Iris versicolor*, a flower which many would like to see become the floral emblem of the Province of Quebec.

Mr. Claude Lemieux, president of W.H. Perron & Co. Ltd., was understandably proud of the success which the introduction of a new hybrid represents, especially when one considers that the improvement of a native species is a very great challenge for researchers.

This new hybrid will be much easier to grow in gardens than the native species. The larger and more numerous flowers, and the plant's improved disease-resistance will make this hybrid a choice plant for gardeners.

The director of the Institut de Recherches en Biologie Végétale, Dr. André Fortin, was pleased to convey his pride in seeding tangible results of this project. “This is an outstanding example of the scientific community and industry working together successfully,” he remarked.

Finally, Mr. Tony Huber, director of the Research department of W.H. Perron & Co. Ltd., who has been working on the project for several years, mentioned that *Iris versicolor*, which grows in many regions of Quebec, has up until now only interested a few hybridizers whereas the Japanese iris has been the subject of improvements and selections for more than 500 years.

The first *Iris ×versata* should be available on the market in 1994.

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**T**HE *Iris versicolor* development programme was officially begun on August 1, 1987, with a grant from the National Research Council of Canada under its Industrial Research Aid Programme (IRAP). A few months earlier the W.H. Perron & Co. Ltd. research department was created at Boisbriand, Quebec.

The rapid progress of the *Iris versicolor* development programme is largely due to the fact that Mr. Tony Huber, the programme's initiator and director of the W.H. Perron & Co. Ltd. research department, had for several years been working to identify in their natural habitat, native populations of *Iris versicolor* from a variety of locales (the Laurentians, Quebec's North Coast, the St. Lawrence River, Newfoundland, and the Magdalene Islands). The range of plants offering the necessary variability for a selection and hybridization programme was therefore already available.

The development programme has two main facets:

1. Two researchers are actively involved within the company: Tony Huber, horticulturalist, and Monique Dumas-Quesnel, agronome. Both work at hybridizing and selecting Iris plants of superior horticultural value.

2. Geneviève Laublin, geneticist at the IRBV, carries out the chromosome counts and works toward obtaining an *in vitro* cultural method for the Irises selected by the researchers of W.H. Perron.

The main objectives of the programme are to develop plants with larger, and more numerous, flowers in a wide spectrum of colors that are better adapted to garden culture, more disease-resistant and flower over a longer period of time.

Apart from *Iris* × *versata*, the development programme has produced a wide range of *Iris versicolor* cultivars which are a considerable improvement over the species. These cultivars should be available on the market in the coming years.

*Iris versicolor* and its related hybrids are virtually non-existent in the North American market at this time. The market is open and ready for new introductions and product development. Furthermore, the increasing interest in and awareness of the environment, pollution clean-up, resource conservation, and the preservation of wetlands and other natural habitats, make *Iris versicolor* and its hybrids choice candidates for increased use. These factors can only contribute to their greater presence in landscapes, both public and private.

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#### *Iris* × *versata*: "The Iris with an Oriental Touch"

The Iris with an oriental touch was obtained by crossing *Iris versicolor*, native to Quebec, with *Iris ensata* (syn. *kaempferi*), which originated in Asia.

*Iris versicolor* grows in the wild in most regions of Quebec as well as throughout North-Eastern North America. It can be found in humid sites, along lakefronts and riversides. Depending on the specific natural habitat its characteristics will vary widely. Selection and development work on this Iris species is only of recent origin.

*Iris ensata* (Thunb.) syn. *kaempferi* (Siebold), the national flower of Japan, has been grown and hybridized there for over 500 years. It was only introduced to the Western World about 100 years ago. It is considered one of the most beautiful of cultivated Irises.

The first crosses between these two species were attempted in 1983. Both the foliage and flower stems of these hybrids have a close resemblance to those of *Iris versicolor*. The flowers themselves are however much larger and do not display the white centre characteristic of *Iris versicolor*. A typical trait of these new hybrids is the yellowish mark on the sepals. The new *Iris* × *versata* hybrids offer many possibilities, largely due to the great diversity of the plants' parents. In short, *Iris* × *versata* possesses the following characteristics:

- better adaptability to garden culture
- larger and more numerous flowers
- longer flowering period
- improved disease-resistance
- more tolerant of variable soil and pH conditions
- reduced fertility of pollen and ovary

Together, these qualities make this a choice plant for gardens and landscapes. Plants should be available to the public in 1994.

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#### About *versicolor* – *ensata* hybrids by Monique Dumas-Quesnel

We would like to rectify the way we had called our *versicolor* × *ensata* hybrids until now. In our last publications we referred to them as *ensacolor* hybrids. But, after many consultations, we agreed that it would be more appropriate botanically speaking to use *Iris* × *versata* instead.

The name × *versata* reflects more accurately the fact that *Iris versicolor* is the pod parent (therefore should be written first in reporting the original cross), and *Iris ensata* the pollen parent.

We are trying unsuccessfully to make the reverse cross (*ensata* as pod parent and *versicolor* as pollen parent). If we ever succeed, the resulting hybrids should then be called *Iris* × *ensacolor*.

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Dr. Currier McEwen has reported that hybridizer Yabuya in Japan has also obtained some *×versata*, but they had not flowered as of yet so we have no information about them and we don't know if chromosome counts have been made to confirm their hybrid nature.

We have backcrossed *Iris ×versata* with both parents, *Iris versicolor* and *Iris ensata*. The results are very exciting. *Iris ×versata* is only partially fertile and produces few good seeds. But those obtained are always interesting.

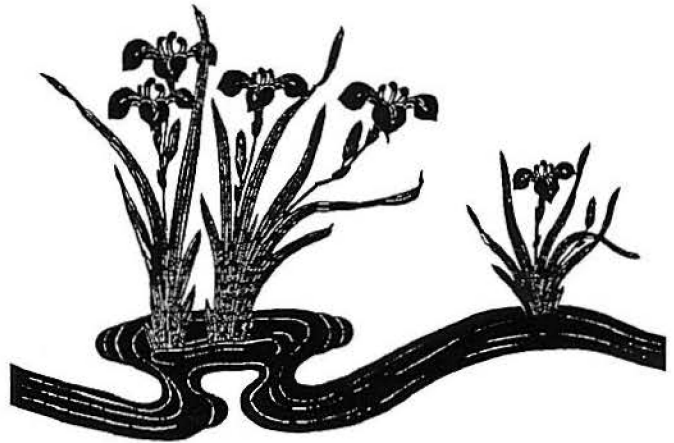
The plants obtained by backcrossing the *versata* with *Iris versicolor* show a great diversity of color, shape and vigour. Colors are often velvety and rich, with almost no white and yellow centre, creating a deeper effect than *versicolor* itself. The fertility of flowers is also completely restored, the new plants producing plenty of good seeds. Their characteristics are more on the *versicolor* side but the *ensata* touch brings great improvement. Their chromosome count is  $2n=120$ , since *versicolor* gave  $n=54$  and *×versata* gave all 66 chromosomes (unreduced gametes). We have a lot of selection to do among these plants due to their great number and differences. They should be registered as *Iris ×versicolor* as soon as we select superior and distinct plants.

Backcrossing *Iris ×versata* with *Iris ensata* is more difficult. Until now we have only obtained one plant from this cross, but the result is extraordinary, thus allowing great expectations for further results in this direction. The plant has won an exhibition certificate in the seedling class of the Iris Society of Mass. show in Waltham last year (1991). It is not yet registered at the moment but should be within a few weeks. Its seedling number is 90X-D0M-064. The chromosome count reveals  $2n=78$ , 12 from the *ensata* parent and *×versata* giving its 66, here again, in unreduced female gametes. The plant seems completely sterile, it is very vigorous and flowers are very special.

Some of these new hybrids will be on display at the AIS convention in Salem, Oregon in 1994 as beardless guest Irises. Slide sets of our research program are presently being made up and will be

available through SIGNA in 1993. If anyone would desire further information we would be glad to hear from you.

[Inquiries should be directed to W.H. Perron & Co. Ltd. at 2914, Boulevard Labelle, Chomedey, Laval (Québec), Canada H7P 5R9.]



## Water Iris—Lost and Found

—J.W. Waddick—

I have been working on an informal list of *Iris laevigata* and its many cultivars. I found out about one newer cultivar from Clarence Mahan called 'Herald Blue' (Zurbrigg, 1982, dark violet blue with yellow signal) introduced by Lloyd Zurbrigg. We all know Lloyd's fame in regard to reblooming iris and the tendency for *I. laevigata* to rebloom (*I. laevigata semperflorens* is notorious in this regard) so this might be a great combination of iris and hybridizer.

But where was this iris? In writing to Lloyd, he told me that the year this iris was introduced he sold only one (1) plant and he never sold another. A few years later he lost the plant and as far as he knew, the plant was gone unless the single buyer still had it. He was discouraged about the entire process of hybridizing and 'selling' *I. laevigata*. Meanwhile in looking over catalogs and lists for my cultivar check list I found a listing in Joe Pye Weed's Garden (Sacks & Schafer) for an *I. laevigata* from L. Zurbrigg, but it was an un-



named variety. A few more letters and eventually it was determined that this is probably 'Herald Blue' rescued from a piece Lloyd sent to Bee Warburton. Next spring's bloom season will confirm this ID and Lloyd now has a couple divisions back home to see for himself. I hope someone buys this iris.

What does this tell us? How can a new cultivar from a well known and highly esteemed hybridizer get lost so quickly? Where is the support (monetary) from iris growers? Sure not everyone can buy every available iris at \$20 or \$30 each, but unless gardeners support hybridizers, we can easily lose new cultivars.

This year we have another new *I. laevigata* on the market. Lorena Reid has introduced 'Midnight Wine' listed as "the closest to black of any *I. laevigata* I have ever seen!". Sounds terrific, but how many of us have ordered this one at \$20? I can't afford it right now and like many will wait 'til the price comes down next year. Or will no one buy it and will Lorena get discouraged and simply remove from the list? Will it go 'away' with 'Herald Blue'? [The editor is pleased to report that his plant of 'Midnight Wine' has been growing like a weed since it was received. Chairman Colin Rigby also has this plant, so it has already at least doubled the sales of 'Herald Blue'.]

Last year Lorena introduced a reblooming "white" *I. pseudacorus* called 'Linda West'. That should sell like hotcakes, but who has it? Even as famous a hybridizer as Ben Hager has not "sold out" of 'Phil Edinger', a very unique and intriguing seedling from 'Holden Clough' and a sister seedling to the great 'Roy Davidson'.

All this boils down to the fact that we water iris growers need to support our few and far between hybridizers. Each year a small handful of new water iris come on the market and some get good PR like 'Mysterious Monique' (what a great name) (also from Sacks & Schafer) while others just dwindle away.

The new AIS species awards are tailor made to award improved varieties of species especially for cultivars of *I. laevigata*, *I. pseudacorus*, *I. versicolor*

and others. But these iris must be registered, named and sold (and bought). So get inspired, dig into your purses and wallets and send in that order you have been thinking about anyway. And maybe all those hybridizers I plugged will send me a free plant just to make sure their creations don't get "lost" for lack of interest. Hint, hint.

#### News and Notes

*I. laevigata* Checklist: As mentioned earlier. I am working on a (very) informal check list of *Iris laevigata* cultivars. I have well over 100 names already, but there are a lot of confused and "iffy" names on the list and some names have never been registered or introduced. Others may be lost. I'd be glad to send you a "working" draft copy (hoping you'll put in some work and add what you know about these names).

For the newest version send me an SASE with 52¢ postage. I'll spring for the xeroxing (7 pages now) (or throw in a couple extra stamps for that if you feel generous). Let me know what you can add and see if we can locate some of these "lost" cultivars. Prompt mailing *not* guaranteed.

*I. versicolor* Checklist: I'll put Marty Schafer "on the spot" a bit. He's been working on a similar list for cultivars of *I. versicolor*. When will this be available?

*I. versicolor* 'Claret Cup': Talking to Bob Pries about a cultivar checklist for the new SIGNA awards lead us both to the '29 and '39 check lists. According to the "bible" the correct name is *I. versicolor* 'Kermesina' and this is synonymous (the same name as) 'Claret Cup', 'Kermesiana', and 'Kermesinia'. How often have you seen 'Kermesina' and 'Claret Cup' listed separately? Correctly any of these must be propagated by division and *not* seed to be the actual named cultivar. How many of us have seedlings of one or both of these growing in our gardens as this cultivar? Seedlings simply do not qualify as a named cultivar. Actually does the real *I. versicolor* 'Kermesina' still exist somewhere or just seedlings or?

*I. versicolor* cvs.: Donna Aldridge talked to C. Gregg Speichst at the Japanese Iris Convention

in Kalamazoo, MI. Gregg says he has two new selections of *I. versicolor* waiting to be introduced. One has very round lilac falls and a strong signal while the other is a white with steel blue veins giving a blue grey garden effect. Neither has been registered (I think) but hope to see them soon.

**Garden Glory:** The biggest hit in my garden this year was an unnamed, un-registered iris. I got it from Joan Cooper as *I. pseudacorus* × *I. versicolor*, but it originated in Germany from Eberhard Schuster and was brought in by the Wilhoits. Up to twenty flowers on a well branched stalk bloomed for weeks. Lots of color, lots of potential and grows well in the garden; I'm putting some in the pond to see if it takes off.

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*[Dr. Waddick also acknowledged Evelyn Jones's hard work in picking up copies of "The Iris of China" from the publisher, shipping fifty copies to Atlanta where they were sold on the spot with the help of LaRue Boswell, and packing, addressing, and shipping more than one hundred copies from her home.*

*He also mentioned that some people had expressed an interest in seeing a water iris plant exchange page in SIGNA.*

*The Water Irises is the only one of the three new regular features introduced in this issue for which a Feature Editor has not been named. If you are interested in the position, or have a nomination, please contact the SIGNA Editor at the address on the mast-head. Writing skills are not a critical requirement; what is needed is someone who has a keen interest in the water irises, who is perhaps more likely than the average member to possess or come across new or interesting information about this special group of irises, and who is willing to select the material which seems most likely to appeal to SIGNA's readers.*

*Support groups are being formed for each of the Feature Editors, in the form of a Robin for the Non-Iris Irids and a Symposium for the Evansias. Something similar is envisioned for the Water Irises; until a Feature Editor is named, please notify the Editor if you have an interest in participating in such an effort. The support groups are intended as "extra eyes" and sources of ideas for the Feature Editors.*

## More on a Water Iris Wide Cross

—Samuel N. Norris—

*[In an earlier article about wide crosses (SIGNA p. 1575), Samuel Norris reported on the results of crosses of 40-chromosome Siberian irises by *I. prismatica*. The resulting seedlings were described as resembling very small 28-chromosome Siberian irises; the blooms were a rather grayish blue. This excerpt from a letter to Elaine Hulbert provides additional information on those crosses.]*

The seed for the 40 chromosome siberians were from the 1971 SIGNA seed list and consisted of *chrysographes*, *clarkei*, *delavayi*, *forrestii*, *wilsonii* and mixed 40's. A short note I wrote about the cross gives the following: June 5, 1984. Pollinized eleven flowers siberian iris. All blooms opened the day prior to normal anthesis and emasculated—petals and sepals also removed. Pollen of *I. prismatica* used. Flowers pollinized were eight mixed 40's, four yellow and four purple. Three of each made seed pods. One spotted yellow and two *clarkei* pollinized and all three made pods.

You might be able to identify the spotted yellow bloom from the seed that were planted. As well as I can remember the *clarkei* was a fairly light purple with a wash of yellow over the standards and the purple bloom was from the mixed 40's. The seed ran all of the way from chaff to perfectly normal looking. After working with the iris seed as much as I have the yield could have been much better. The two species used as well as the mixed 40's produced essentially the same quality of seed.

In my opinion the inter-series crosses are as much or more important than the majority of inter-species crosses. Many of the species, such as the oncocyclus and the Louisianas should be listed as ecotypes rather than species. Where these species are inter-crossed full pods are the rule rather than the exception. Where crosses such as these have been made there isn't much point in listing them but it should be noted that these are easily made and fully fertile.

## What is This Siberian?

—Several Contributors—

A small Siberian iris, in both blue-violet and white forms, is a popular and relatively unique plant for landscaping. Yet its identity seems to be uncertain. It is known by a variety of names; perhaps a reader can shed some light on the true identity of this plant.



*I. sanguinea* var. *pumila*, white form, with ball-point pen  
Photograph by Michio Cozuka

Michio Cozuka, of Nagoya, Japan, describes the plant in his photograph, above, as being known as *I. sanguinea* var. *pumila*. Leaves are 20 cm long, with the height of the flower stem being 25 cm. The white object in the foreground is an ordinary plastic ball-point pen.

Jean Witt, whose husband saw the same plant in England in the late 1960's, believes that *I. sibirica nana alba* is pure *sanguinea*, showing no *sibirica*.

Both *sibirica nana* and the white form, *alba*, were registered by Perry in 1940. Whether today's plants are the ones registered may not be determinable; the height is certainly as described.

Molly Price, in her *The Iris Book* (D. Van Nostrand Company, Ltd., 1966) mentioned that "a true dwarf, not new, has recently arrived from England" and refers to it as 'Nana'. She quoted the Melrose catalogue as saying that "no one seems to know exactly *what* it is, except utterly charming."

Mrs. Price also mentioned that she grew only one dwarf Siberian, the blue-and-white one known variously as 'Acuta' and *Iris acuta*.

SIGNA's own Roy Davidson provided perhaps as complete an answer as possible in response to a reader's question (SIGNA p. 1218) regarding the lack of clarity in the checklists about "*Sibirica acuta nana*": "The name 'Acuta' has been applied to various irises at one time or another, apparently for the first time by Willdenow (who was at one time director of Berlin Botanic Garden and producer of the fourth edition of Linnaeus' *Species Plantarum*). Of course, since he intended to describe a species, no single plant was intended. There is no direct reference as to who recognized the relationship to *I. sibirica* although Krelage gets credit for this first such catalog listing, the date 1876. Reichenbach had illustrated it in color in 1847 along with another, *I. maritima* Miller 1768; Dykes (1913) included both within *I. sibirica*. There seems to be no record of the original inclusion of 'Nana' here although the checklist indicates that ACUTA applied to a dwarf growing plant and that it had been cataloged in France since 1839, in Britain since 1854. That it was in the experiment station collection at Ottawa by 1908 and available in this country from Farr in 1912, whether or not a single clone. Perry cataloged a clone as 'Siberica nana' and a white counterpart as 'Siberica nana alba,' both in 1940. What goes by this latter designation does seem to be uniform. It may have been brought to us here originally by Geisers of Kansas who imported a good many irises from abroad."



Waddick and Zhao's *Iris of China* gives a range of 20–60 cm for the leaves of *I. sanguinea*, and cites a white form (f. *albiflora*) as being native both to China and Japan, but does not give different size specifications for the white form. Perhaps Prof. Zhao has observed the dwarf form in the wild and knows its origin?

Clearly this plant deserves its own name, and preferably only one name. Should any readers be able to provide additional insight into this, results will be published in a future issue of SIGNA.



*I. sibirica nana alba*, in the Roy Davidson garden  
Photograph by Jean Witt

## Dr. Koji Tomino

The letter from Michio Cozuka containing a photograph of *I. sanguinea* var. *pumila* which is reproduced in this issue also carried the sad news that Dr. Koji Tomino had died February 12, 1992.

Dr. Tomino was a leading authority on *hanashobu*, Japanese Irises, especially the Ise strain (the classic single form with falls which hang downward), as well as the classical Japanese cultivars of *Dianthus* and the wild Iris species of Japan.

SIGNA's pages have benefitted from the wisdom of Dr. Tomino virtually from the beginning—pp. 60, 307, 435, and more; he is also cited in the American Iris Society's *The World of Iris*.

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## Book Review: *Iris of China*

by Dr. James W. Waddick and  
Professor Zhao Yu-tang

*Reviewed by Bruce Richardson*

This book was published in 1992 as the work of Dr. Waddick but its main intention was to make the studies of Prof. Zhao Yu-tang available in the English language. Dr. Waddick is a 52-year old botanist who was born in Chicago and holds degrees from the Universities of Illinois and Kansas. His main interest has been rare species of iris, and in 1989 he travelled extensively in China for a month, partly with Prof. Zhao Yu-tang and a graduate student, into the back country in search of known species which were not in cultivation (or very rarely). So he brought back over 400 specimens of some 17 species, and distributed them to his 20 sponsors, one of whom was the Canadian Iris Society. This publication is the outcome of that trip, and the studies he made preparing for it, combined with the previously published work on Chinese Iris in 1985 by Prof. Zhao Yu-tang. This earlier work was written in Chinese, and has only now been translated into English to make it known worldwide.

The book contains 192 pages, of which the first 69 consist of the work of Dr. Waddick including 31 colour pictures of the 60 species endemic to China. These are two to a page, and show excellent detail of the flowers. They are from several sources, but include pictures taken by Dr. Waddick in China as well as some by Prof. Zhao Yu-tang and others. The text in Part I of this book consists of information gained by Dr. Waddick from extensive research of literature, as well as from his travels in China. China contains some 60 species out of a world total of nearly 300—more than any other country in the world. By comparison, North America has some 30, and Europe only 25. Very little living material of these Chinese species has been introduced to the Western world from China itself, but close to half have been from where they are found in adjoining countries.

Those endemic to China only are hardly known, even in China, as it seems there is less “iris interest” in China than in Western countries. These rare species are also mainly found in less populated sections of China, far inland on desert plains or mountains, with no exact type locations specified and only located by diligent search when in brief bloom, and in a harsh climate for travelling.

The major part of the text has to do with descriptions of the Chinese species in their native habitats. This information is most valuable to those wishing to grow these sometimes fussy species, and makes very interesting reading as to the conditions in China. Future prospects are discussed as to what new types might mean for our gardens, as there are at least 30 species with a gene pool entirely unexplored. The third section of Part I covers the cultivation of Chinese Iris already introduced over the last two centuries; there is a great deal that is new and invaluable for those starting to cultivate the rarer Chinese iris that are just now becoming available.

The notes are for the various series, and are quite detailed as to methods and requirements. The descriptions are also most useful and understandable, being written in non-technical languages—in many cases from personal experience.

The balance of the book (known as Part II) consists of the Genus *Iris* part of the *Flora of the Peoples Republic of China*, a still unfinished work of many volumes by many authors. All of it is written in Chinese, and this is the only part ever published in English. This portion written by Prof. Zhao Yu-tang was published in 1985 and translated in 1991 by Youngjune Chang.

Prof. Zhao Yu-tang is a professor at the Northeast University in the city of Changchun, in the province of Jilin, which is in the northeastern corner of China (there is only one of China's 30 provinces further north than Jilin). In the course of his iris research, Prof. Zhao Yu-tang had discovered and described seven new iris species. The other known species have been collected, and in many cases only described from herbarium specimens of most of the Chinese iris over the past 200

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years, and botanists were able to describe these species and name them from the herbarium sheets without actually ever seeing the living plants. Prof. Zhao Yu-tang has researched this material and assembled it in one place—in most cases in a more complete form than the originals. He starts by describing classification characteristics, and goes on to provide a complete key, which takes up seven pages. The descriptions are by sections of closely related species, but are given separately for each species. The source material gives the name of the botanist who first described the species and then following literature. In the original Chinese version, the species name was given as the local Chinese one, and now translated to the English equivalent. This is not the same as the Latin name or the English garden name (which is usually the Latin name). For instance: The Chinese name *Huanghua Yuan Wei* (the equivalent of yellow-flowered iris) becomes the familiar *I. wilsonii* in Latin and English. None of the Chinese Iris appear to be known in China by the Latin names, perhaps because they were known by these native names long before Latin was used as a scientific language.

There are line drawings for each species, with up to seven drawings on each page covering two species. These are very fine, and excellently done (by either Prof. Zhao Yu-tang or Yu Zhen-zhou) and show great detail of all the parts. These drawings and descriptive text make this a work that is bound to be most useful in the years to come, as more of the rare types are introduced to our gardens.

There are a number of appendices at the back of the book, and these too are most informative about China. Number I gives the name of the species as known in China (but spelled in English), and then the English meaning of this Chinese word, and finally the Latin name. It can get quite confusing when you start with *Yuchanhua*, convert it to *Jade Cicada Flower* and follow that with *I. ensata*, and finally the common name in English—Japanese Iris—and its native home is in China! Seems some plants were taken

to Japan as much as a thousand years ago. It requires three pages to print all the names of the Chinese species.

Appendix 2 is a bit like #1, but is concerned with names of provinces in China. There are three sets of names to show: Pinyin, Official and Traditional. Not all have official names, and those that do have two or three for large areas, such as Inner Mongolia. The Pinyin name is the new spelling for older English names such as Peking (which is now Beijing) and which in English sounds similar to the name as spoken in Chinese. Thus you are speaking Chinese when you say Beijing.

Appendix 3 shows the distribution of iris species and cultivars over China and adjacent countries by regions and Chinese provinces. Useful in determining where in China the species is found to match growing conditions.

Appendices 4 and 5 show climactic zone maps for the United States and China. These zone maps are duplicates of the Canadian system.

Appendix 6 lists nurseries in the United States which sell iris species and cultivars. It is a short list that ignores the large number of growers who will trade or donate species.

Appendix 7 is a conversion table for metric to English standards.

There is a glossary of scientific terminology which describes, in plain English, what terms such as *caudate* indicate (tail-like part or having a tail). This terminology is used as a form of scientific shortcut to save space.

The bibliography covers four pages, and is divided into five parts: General and Systematics, Floras, Cultivation, Chromosomes, and Specific Accounts. It forms a measure of the amount of research work that went into both this book and Dr. Waddick's expedition to China. It also shows what a wealth of scientific information is available, and where it can be found.

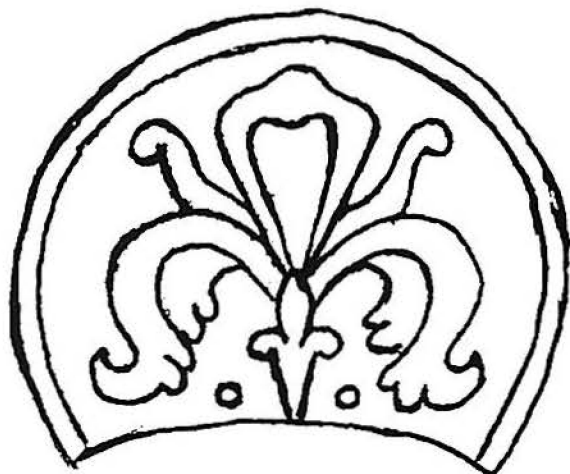
The index covers four pages, and is quite detailed in that it gives all the page numbers for each species (or other item) which it shows in alphabetical order.



This book has been purchased by the Canadian Iris Society, and will be kept in the library of the Royal Botanical Gardens. Like all the CIS library material, it can be obtained for loan by contacting the Royal Botanical Gardens.

It was printed by and is available from Timber Press Inc., 9999 S.W. Wilshire, Suite 124, Portland, Oregon, 97225.

*[Reprinted from the Newsletter of the Canadian Iris Society, Vol. 37, #4, October, 1992, by permission of the author and of Editor Marie Dawson. Bruce Richardson was the original Editor of SIGNA.]*



This only slightly stylized iris flower is the motif in seven medallions in a 13th century stained glass window in Chartres cathedral. It commemorates Simon de Montfort, Earl of Leicester. Though born in France, he led a successful rebellion against his brother-in-law, Henry III of England, forcing reforms. He was subsequently killed and discredited, but is remembered for his contributions to the evolution of representative government in England.

The iris has blue-green falls and near-white standards on a ruby red ground.

—Notes and sketch by Jean Witt—

## Seed Exchange Report

—Constance Hansen—

Around 215 orders from many parts of the world were received, over  $\frac{2}{3}$  of them coming in before the end of January. In answer to those wishing for a more timely distribution of seed lists to the more distant areas: even if all the lists were received in time to allow for simultaneous ordering, there would be difficulty in deciding priorities on orders all coming in on the same day. A suggestion to those disappointed in not getting seeds they especially wanted would be for them to write the donors to see if they happened to have any more, being sure to enclose an SASE for a reply.

A lot of time and care was taken where substitutes had to be chosen, to select related species, or ones that would be suitable for the region from which the order came. Towards the end, when there were no suitable substitutes for some kinds, money was refunded.

Orders varied all the way from one to seventy dollars, with quite a number over twenty. It would seem that a limit of fifteen dollars per order would give more people a chance of getting the seeds they want. Priority is given to seed donors. This should be an incentive to seed savers.

The supply of arils and bearded species was soon sold out. We hope growers of these sorts will plan to save more this year, also seed of the Junos. There is a demand for HP seed, especially inter-specific crosses, and for clones of special color forms, and rebloomers.

The ample supply of oncos from Israel were much appreciated, as were the special *versicolors* from Quebec. There was a good supply of JI's, *levigatas*, and siberians, but we could use more of the *sibirica* type species and HP crosses.

Seed should be sent to the chairman to arrive by November 15th, in order for the list to be made ready for mailing the first week in January.

*[The Editor apologizes to Constance and to all for the lateness of this issue, which will not be delivered to the membership by November 15.]*

# Leland Welsh

February 16, 1929 – May 2, 1992

Leland was born and raised on a farm in the Eaton Rapids area of Michigan and held many values derived from this background. He loved to make jellies, pickles, dry corn, and use many family treasured recipes for potlucks and entertaining friends. He honed some of the skills he learned from his mother and had a fine recipe collection.

Leland studied horticulture at MSU and after serving in the Korean War enrolled at the University of Michigan where he received a degree in Architecture. He worked as a draftsman and architect. He loved irises and was a member of Southwestern Michigan Iris Society from about 1966 and served in many officer positions. He was especially interested in the Iris Shows and served as Chairman for many of them. He was a twenty-year member of AIS and enjoyed several national conventions and served Region 6 as Judges Training Chairman for ten years, keeping the records and arranging and/or presenting programs to improve the quality of the judges of shows and gardens. He had a special love for the Japanese Iris show and had arranged with Sylvia Wong, a Sogetsu teacher, to do a very large arrangement as a focal point and for her to give arrangement demonstrations which were popular. He served on the editorial committee for *Japanese Irises*, the book edited by Currier McEwen for SJI. Photography was a major hobby and he had wonderful pictures of most types of irises and shared these in programs and for use in iris publications. Lee enjoyed knowing and having friends in many of the speciality Iris Society sections and became a Life member in AIS and several sections. He was a very dedicated worker especially serving as editor of *The Review*, Society for Japanese Iris section for eight full years. He was artistic and designed many high-quality covers for local shows and AIS publications, using his drafting and architectural training. He was at the time of his death Vice President of SIGNA, and gave several programs on the species irises and was growing several of them. Lee was very dedicated and will surely be missed when people realize how many jobs he performed with great skill and dedication. He was a member of First Methodist Church of Kalamazoo, sang in the choir, and was famous for the pies he made for them on many occasions. He also served on the altar committee and did many arrangements for the altar.

Leland unselfishly shared his talents with all those he came in contact with.

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## Update on *Pardancanda* and the Parent Plants

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—Sam Norris—

**I**T IS NOW 25-plus years since the first successful cross between *Pardanthopsis dichotoma* (formerly *Iris dichotoma*) × *Belamcanda chinensis* was made. In spite of many tests that have been run little more is known about the plants than was evident 25 years ago. The cross has become almost routine now and will produce more pods and seed than *P. alba* × self or sib will produce. The plants that had grown for so long both here and in Europe would not cross but the introduction of plants from other sources proved to be quite fertile in the crosses.

For some reason the blooms that showed the wide variation in colors were all of the *B. chinensis* type. Much of the variation that showed up in the second generation has now been lost in the seed offered by Parks and others as the Candy Lilies. The *P. dichotoma* type of bloom offers very little color variation, with white, a very pale yellow, a pale pink in addition to the lavender blooms that most are familiar with. The pink was a very delicate plant that failed to set seed and that didn't make it through the winter.

Strangely enough the only completely white bloom of the *dichotoma* type showed up in the *Pardancanda norrisii* blooms and not as might be expected in the *P. dichotoma* blooms. The *P. dichotoma alba* blooms, at least all of the ones I have grown, have a colored section on the falls directly under the style arms. This color runs from a pale green through chartreuse to yellow. One of the most attractive blooms had a fairly bright yellow underneath the style arms.

Plants started from seed from both the solid white and the pale yellow *P. norrisii* made good growth this summer but failed to bloom. I am looking forward to blooms on both crosses this next summer. The seed were from blooms that

were selfed so some of them should produce blooms of the same color. There is evidently a linkage between the *P. dichotoma* type of bloom and the more subdued colors. If this linkage can only be broken all of the colors and patterns that have shown up in the *B. chinensis* type of bloom should also show up in the *P. dichotoma* types.

Some of my test crosses lead me to believe that the white in *P. dichotoma* and the yellow in the *B. chinensis* offered by Parks are both recessives, and that both are caused by inhibitor genes. It is relatively easy to check for recessives. Cross the white *P. dichotoma* with the lavender one. All of the seedlings will have lavender blooms. The second generation seedlings from selfing or sibbing these plants will produce both white and lavender blooms. The same holds true with *B. chinensis*. By crossing the yellow with the spotted the first generation from this cross will all be spotted, while the second generation will produce both yellow and spotted blooms.

Checking for the suppressor genes is not quite so straight-forward. In an effort to secure better colors in the *P. dichotoma* types crosses were made between *P. dichotoma alba* and the spotted *B. chinensis*. A cross was also made using the lavender *P. dichotoma* and the yellow *B. chinensis*. I had no idea what to expect but what showed up was altogether unexpected. Both crosses produced plants having blooms that were identical to each other and to the blooms from the cross of the lavender *P. dichotoma* × the spotted *B. chinensis*.

After giving this a whole lot of thought it seemed to me that the *P. dichotoma alba* must still carry the genes that produce the lavender blooms and that the yellow *B. chinensis* blooms were carrying the genes for the spotted blooms. In order for the genes to be present but not to be expressed there would have to be other genes present that

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would suppress the genes for the normal colors and allow only the whites or the yellows to show.

A cross of *P. dichotoma alba* with the yellow *B. chinensis* produced blooms having the intermediate form, all of which were an off color white that showed just a touch of yellow. The white and the yellow blooms that were mentioned earlier came in the second generation cross from these blooms. There was quite a lot of variation in the type of blooms produced but all had the white or yellow coloring.

These crosses, as well as the ones that show the white and the yellow to be recessive, can be easily repeated. If anyone can come up with an alternate explanation for the result of these crosses I would like to hear what it is.

#### CROSSES REFERRED TO

1. *P. dichotoma lavender* × *P. dichotoma alba*  
 $F_1$  all lavender       $F_2$  both lavender and white
2. *B. chinensis spotted* × *B. chinensis yellow*  
 $F_1$  all spotted       $F_2$  both spotted and yellow
3. *P. dichotoma lavender* × *B. chinensis spotted*  
 $F_1$  much darker than *P. dichotoma*  
 $F_2$  very wide range of colors
4. *P. dichotoma lavender* × *B. chinensis yellow*  
 $F_1$  same as in #3       $F_2$  cross not made
5. *P. dichotoma alba* × *B. chinensis spotted*  
 $F_1$  same as #3       $F_2$  cross not made
6. *P. dichotoma alba* × *B. chinensis yellow*  
 $F_1$  all off color white       $F_2$  both white and yellow

After reviewing the crosses made it became rather apparent that both of the  $F_2$  crosses in #4 and #5 should have been made. It is possible that these crosses could have led to different color combinations.



'Summer Snow,' a seedling from ×*Pardancanda norrisii*, raised and registered by George C. Bush. The drawing, by Jean Witt, originally appeared in SIGNA (p. 688) in connection with a story on p. 691. Mr. Norris's original article on the cross appeared on p. 106f; Lee Lenz's, with photographs, on p. 265f.

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## Another New Iris Species?

—Sam Norris—



WHENEVER I run across any mention of the Paria River iris, *I. pariensis*, it puts me in mind of an iris find I made several years ago. This find was made very close to Green River here in Kentucky, growing on the side of a railroad embankment. Green River floods quite frequently and the embankment had been built high enough to keep the railroad above even the worst floods. The embankment had probably been there 50-75 years judging from the size of the trees growing on it.

The iris rhizomes were growing on top of the ground, which was composed mostly of rock, with the roots growing down through the rock to reach what little soil had been trapped between them. From the length of the old rhizomes and the way they had wandered around it was apparent they had been growing there for many years. There was no bloom when I found them but their growth habit reminded me of *cristata*. As both the foliage and rhizomes were quite large it went through my mind that I had found a king sized *I. cristata*.

I selected one small portion of the plant to bring home, thinking that it would bloom the following year. Extreme care was taken to see that the rest of the plants were not disturbed. When the iris was planted here at my home garden it made very vigorous growth, and the following year it did indeed bloom. My visions of finding a new species were dealt a death blow when the iris bloomed. It turned out to be *I. virginica* and not a very good one. The change in the growth habit was no doubt due to it growing on the very rocky embankment where it got very little sun or water and where the rocks kept the rhizomes from growing into the soil. Any water must have run right off and any nourishment would have washed off with the rain.

As *I. virginica* is primarily a water plant it is not surprising that the plant growth did not look anything like *I. virginica* normally looks. Almost any plant that is placed in an environment that is completely different from where it has been growing will either die or suffer a number of changes in trying to adapt. It could well be that *I. pariensis* is not a new species but is instead a known one that is trying to exist in a hostile environment.

[According to his report published in the July, 1992 *Bulletin* of the American Iris Society, Norlan Henderson has examined the herbarium specimen of *I. pariensis* and others sufficiently like that he is satisfied that it is only a depauperate *I. missouriensis*.—Ed.]

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# Plant Chimæras

—Jean Witt—

Here is a topic of interest for those who work with hybrids of diploid species. Recently I came across a book entitled *Plant Chimæras* by Richard A. E. Tilney-Bassett, Dept. of Genetics, University of Swansea, Wales, published by Edward Arnold, 1986, which sheds some interesting light on the problem of variegated foliage and flowers.

It seems that vegetatively propagated plants, and in particular diploid hybrids, tend to mutate and become mosaics of tissues with different genetic composition. Variegated-leaf shrubs are the commonest examples. You've all seen them—leaves with white edges/green centers, or the reverse (less common), those with green edges/white centers. Because of the way leaves are put together and the way in which they grow, the first example is caused by the loss of chlorophyll production in the outer layer of meristematic (growing tip) tissue—known to botanists as L-I; in the second case, the loss mutation is in L-II, with L-I being normal. Now here's the weird bit: in most plants, pollen and ovules are developed from the interior layers, L-II and L-III, not from the surface layer L-I. Since petals are really specialized leaves, it is possible therefore to have a white petaled flower with a loss of blue pigment in L-I only, which may not give white seedlings, but mostly blue ones derived from the unaltered interior layers. According to Tilney-Bassett, many so-called dominant whites in flowers are this type of chimæral white—they always give at least some colored seedlings.

Diploid hybrids with their sets of not-quite-matching chromosomes are more likely to suffer from mutations than are their tetraploid counterparts where every chromosome has a partner. Further, plants which become mosaics through mutations of this sort tend to spontaneously “recover” toward one parental species or the other.

‘Holden Clough’ and its descendants may just possibly be involved in this sort of process—note Ben Hager's comment that “the further you get from ‘Roy Davidson’, the more like *I. pseudacorus* the seedlings look”. In subsequent generations the pollen and ovules that join to give viable seedlings may tend to have chromosomes mostly from one parental species or the other rather than the F<sub>1</sub> mixture.

It is possible that the *winogradowii-histrioides* hybrid ‘Katharine Hodgkin’ is a mosaic—the amount of blue streaking seems to vary from flower to flower and from year to year, as if blue tissues were “hidden” under the pale yellow surface.

Unfortunately, iris flowers are not among those that have been investigated, but I can't help wondering if some of the first examples of dominant white in white or yellow tall bearded—which often were not very clean and sometimes blotched with colored “returns”—may have initially been chimæras of the type that Tilney-Bassett describes, long since stabilized by decades of breeding. Some of the early tetraploid Onco-Bearded hybrids which show both “returns” and “deletions” are another possible example.

Since SIGNA members deal with many different groups of irises and hybrids, our chances of seeing chimæras should be fairly good—if we can recognize them. Does the white *I. setosa* ‘Kosho-en’ breed true—or is it white on the surface only, over genetically colored interior layers? What about dotted borders which are now appearing in groups other than bearded? For that matter, what are the chances that pattern itself is due to color being present in one layer and not in another? The possibility that at least some iris hybrids may be chimæras would seem to be a fertile field for investigation—keep your eyes open!

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## Excerpts from Species and Natives Robin #2

—Sharon McAllister—

As for the usual weather report—it's been anything but usual. Onco bloom was sparse, with the early and mid-season bloom curtailed by freezes. I tried a different form of winter protection, which worked better than previous experiments, but still needs some refinement. At least I didn't lose a lot of plants—the oncos were hit hard in the winter of '89-90. The tetraploid RC's & OG's, however, did quite well and set a number of pods when crossed with both TB's and half-breds. My arilbred seedlings were the stars of the show, however, with several lines starting to pay off. I had quarterbreds with nice signal spots, arilbredmedians starting to exhibit improved fertility, some breakthroughs in my tangerine pink lines, and more plicata-like patterns in the half-breds—but the seedling patch is outside the scope of this Robin, so I'll skip the detailed descriptions.

It was a great spring, but when the summer rains hit, they did so with a vengeance. We lost the east fence and levee, and a lot of posts in the north fence to one downpour, but the iris beds are at the west end of the property and the levee above them held. There was a lot of erosion in the paths, but the boarded beds held the plantings themselves in place. The heavy rains brought our annual rainfall to about 50% above normal—to about 12" for the year.

Actually, the summer was an unusually mild one. A number of the arilbreds didn't go dormant. I haven't figured out exactly what made the difference, especially for varieties that are split among the beds. One triploid went dormant in a two-year-old shaded bed, while the same variety did not go dormant in a one-year old bed planted in full sun. Whether this is an advantage or not remains to be seen. The ones that didn't go dormant did not hold up as well in storage and, much to my dismay, the green leaves dried up after planting to provide a comfortable haven for

aphids. This has combined with a relatively mild winter to produce the worst winter aphid infestation that I've ever seen. I'll be interested in seeing how well their performance compares next spring.

The project of rebuilding species colonies continues. The last couple of years, I've been experimenting with the regelias. Although some clones grow well, I've always had problems getting as much bloom as other nearby growers. For awhile, I thought that perhaps it was that the winters are too mild. That had definitely been the case with the medians. Gus Seligmann's garden was only five miles away, but in the valley where the cold air could pool overnight. My garden is on the hillside, almost to the top of the mesa, where it gets plenty of cold wind but the overnight low usually is several degrees above that of the valley. Gus had an impressive median display, when I only managed to get median bloom by dumping the ice from the dog's pan into the median bed anytime it got cold enough to freeze over. (That may not seem like much, but the dog was a St. Bernard and his "pan" was a 4" stock tank.)

The winters may certainly be a factor, but I've found that the summer heat is a more important one. I know that our summers are hotter and dryer than those of their native lands, but the regelias haven't responded as well as the oncos to being dug and stored until fall. In the last few shade cloth experiments have drastically improved both survival and bloom rate of arilbred seedlings, so I tried shade cloth on some of the regelias last year. This spring brought the best bloom ever on *I. stolonifera* and *I. hoogiana*. This year, I moved all of the regelias to beds along the picket fence, where it will be easy to protect them with shade cloth next summer.

There are enough clones of *I. stolonifera* now that I feel justified in calling it a breeding colony—although I'm certainly open to acquiring

more. One clone is especially vigorous, although not the most beautiful. I've used it as the pod parent for most of the crosses that I've sent to the SIGNA exchange the last few years, crossing the more beautiful but less vigorous registered varieties onto it. If any of you have grown any of those seeds, I'd be interested in hearing about how they've done for you. This is also the one that I've listed in the ASI sale several times.

The oncos are another story. Some survive here under naturalized conditions (summers with high temperatures frequently over 100 and occasionally over 110, coupled with humidity under 10%, winters with many low temperatures below freezing and sometimes below 10, with an average rainfall of 8", half of it in July and August). I've found that John Holden's hypothesis that the oncos are really an ecospecies holds true genetically, but not culturally. The southernmost species can't take our cold winters. In nearby Chapparral, Lu Danielson grows *I. nazarena* in pots than can be wintered in the greenhouse. The northern ones need shade to make it through our hot summers. It's the advanced-generation hybrids that are the easiest to grow. I tried the shade cloth this year on one bed of mixed oncos, with encouraging results. Next year, I plan to move the oncos to more protected beds, as well.

Growing arils from seed is a separate problem. They're easy to culture, so I've grown a lot of seedlings—but relatively few survive to bloom size. When I've lined them out in the fall, I have heavy winter losses and then lose more over the summer. When I've lined them out in the spring (when I line out the arilbred seedlings), they do well at first but few survive their first summer dormancy. So far, shade cloth hasn't been as effective for the aril seedlings as for the arilbreds, so this year, I tried carrying the seedlings a full year under growlights. Many still went dormant, but some had formed nice-sized rhizomes by the time I lined them out this fall. Now, time will tell...

I enjoy your letters and pictures very much, but I really don't have much to contribute to the discussion. About the only real success I can report is with

the arils—so I'm definitely the misfit of this group. "Someday" I'm going to try a separate bed of junos. I've grown *I. bucharica* with oncos and arilbreds, with about equal results. *I. missouriensis* grows beautifully in the Sacramento mountains, about a 2-hour drive to the east of Las Cruces, but I've given up trying to grow it here in the desert. I like getting a jump on spring with *I. reticulata* and *I. danfordiae*—but they have to be replanted here every year. I have managed to keep a few species alive by growing them under shade cloth like seedlings, but bloom is rare and seed set nonexistent.

I enjoy a good challenge, but I've never tried grow water-loving iris under near-desert conditions. That means I have no first-hand experience with the 'Holden Clough' family, but I was fascinated with the discussion in this round. The problem is similar to the one I've been working with in my 'Gene's Little Secret' line. GLS is from 'Lillibright' × *I. susiana*—but looks like a quarterbred, at most. Crossed with half-breds, it yields plants in the 15" to 18" range, with flowers and branching like half-breds. Some of those offspring have proved fertile when intercrossed, but this hasn't been an easy cross to make (hundreds of crosses to get one pod!). Arilbredmedians of this type (median × diploid aril) are usually infertile triploids, but GLS acts like a tetraploid. I've been trying GLS with every variety of this type that I can find, in search of other exceptions. Crosses with the presumed triploids 'Ginger's Girl' and 'Jacob's Well' have produced a number of seedlings. It appears that the tetraploid-triploid cross works as well in the arilbredmedians as it does in the arilbreds themselves, in spite of the trispecies triploid's reputation for sterility.

In other words, I found much less fertility than I'd hoped for in backcrosses, sib crosses, or even half-sib crosses—but much better than I expected in outcrosses. If I could grow the species involved in the 'Holden Clough' family, this is what I'd try:

1. Self or sib-crosses of Sarah's [Tiffney] 'Holden Clough' × self seedlings, using John Holden's auxin technique.

(This has given me otherwise unobtainable success with onco self crosses.)

2. Literature search. What else, if anything, is available that is *I. pseudacorus* × “something”? (Whatever “something” is possibly the mystery parent of ‘Holden Clough’.) Such a variety would be an excellent candidate for crossing with ‘Holden Clough’ or Sarah’s seedlings.

3. Crosses between ‘Roy Davidson’, ‘Phil Edinger’, (or other advanced-generation offspring of ‘Holden Clough’ with *pseudacorus*) and Sarah’s seedlings. (I’ve had good luck in crossing three-quarter arilbreds back to half-breds, which gives me reason to believe this course might be productive.)

4. Crosses of *I. pseudacorus* with species that could be the mystery parent of ‘Holden Clough’—both for comparison and breeding purposes. From my work with wide crosses in the arils, I wouldn’t be surprised to find some resemblance to ‘Holden Clough’, but I certainly wouldn’t expect to find it, either. Any seedlings obtained could then be tested with ‘Holden Clough’ and with Sarah’s seedlings, as well as with each other. With *I. pseudacorus*’ reputation for fertility in wide crosses, this might not take as long as the programs I’ve been working with—but I’d certainly consider it a long-term program.

Does this make any sense to those of you who’ve actually grown these?

## Adopt-a-Species Program

—Sharon McAllister—

In general, iris species can be divided into three categories:

1. Widely grown—Need no special attention
2. Marginal—Not common, but grown by enough people that they’re in no immediate danger
3. Rare—Grown by so few that they are in danger of being lost.

The SIGNA seed exchange takes care of preserving the species in the first two groups, but some of those in the last group need a little special attention.

The purpose of this program is to know who grows these rare species so we can work together to preserve them. Perhaps no one person has a breeding colony of one of these species, but several can work together to develop one.

### Suggested Activities:

*Pollen Exchange.* There is enough difference in bloom seasons to benefit from south to north pollen shipments. When seeds are produced, ½ can be kept by the host, ½ returned to the pollen donor, or one of them can grow the seedlings and later divide the resulting plants. The exact split should be up to the two individuals.

*Plant Exchange.* This comes naturally whenever irisarians work together, but it’s not the primary purpose of this program. Our goal is the establishment of breeding colonies, and species propagation by seed. If individuals in the group wish to exchange plants, they are free to do so but it shouldn’t be a requirement.

*Seed Exchange.* The annual Seed Exchange is SIGNA’s primary fund-raising activity, so this program should do nothing to undercut it, but informal exchange of seeds between members of this program should be encouraged.

*[Sharon included this marked as a draft in the Species and Natives #2 Robin. It should not be presumed that she has volunteered to head or organize such an effort, but she might welcome your comments and expressions of interest, which should be addressed to P. O. Box 112, Fairacres, NM 88033.]*



## Sharon's Suggested Form for Species

Species \_\_\_\_\_

1. How many clones do you grow?
2. List any selected variants.
3. How many of them have you grown from seed?
4. What is your approximate bloom season?
5. Are you interested in being a pollen donor, a host, or both?

For example: Species: *I. hoogiana*

I grow 10 clones, all obtained as plants.

Named Variants: Alba, Alpheus, Conical,  
Ice Bowl, Late Amethyst

Others: Purpurea (fertile form), USSR #1,  
USSR #2, Large, Pinkish.

Bloom season is Late March and Early  
April.

I'll ship pollen, or act as host if pollen is  
available.

## Kind Words from a Member

[Secretary Florence Stout forwarded the following note from Susan M. Sussman, a renewing member from Lake Peekskill, NY. The logotype is reproduced actual size.]

**earthcare**   
organic gardeners

landscape design, perennials, flower &  
vegetable gardens, stonework

Dear Mrs. Stout,

Herein please find my check for \$10.00 for the next three years SIGNA dues, a small price for such a large return in knowledge & fun. I particularly like the seed exchange. Where else can you find so much adventure & excitement for 50¢ a shot?

The *ensata* I started from seed two years ago bloomed this spring & the *pseudacorus* you sent me when I first joined are now a giant clump in my garden pool.

As you can see from the letterhead, I've turned my long-time hobby into a small mom & son gardening business. In addition to iris, I'm also interested in lilies, daylilies, antique roses, crinum, any shade-tolerant flowering plants as most of my customers have shady yards. If you have any suggestions I would greatly appreciate any help or advice.

Thank you very much,

(s) Susan M. Sussman

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## How to Register a Species Cultivar or Species Cross

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**AIS** REGISTRATION OF A SPECIES CULTIVAR OR species cross is one of the requirements which must be satisfied in order for an iris to be eligible for the two new awards created by SIGNA: The Founders of SIGNA Medal, for species cultivars, and the Randolph-Perry Medal, for cultivars resulting from interspecies crosses. Recent experiences of some aspiring registrants suggest that a gap, at least in understanding or acceptance, exists between the rules of registration and the accepted practices of the rest of the botanical world. It is hoped that more definitive guidelines for both the registration of species cultivars and species crosses and the eligibility for the two awards can be agreed upon and published in the next edition of SIGNA. Until that time, the guidelines given here should allow such registrations to be completed successfully without unnecessarily obscuring the species identification.

A fundamental difference in point of view is possibly part of the problem. When examining a new iris book as a prospective addition to your library, once you have examined each and every color plate, do you turn next to the "I." section of the index or to where you can determine if a particular recent introduction is treated? Whatever your priorities, it is safe to assume that a large number of irisarians do not share them, even though they might be in other respects quite decent sorts—even good friends and species lovers.

Those who are more than passingly acquainted with and interested in the species irises routinely work with validly published names as well as the invalid. They identify irises not only by the species, but often by the collector of the clone and/or the collection number or code. Some have extensive knowledge of herbaria and their specimens. While they may also have a strong interest in the non-species irises and modern hybrids, these people are not quite the same as those who have no interest in the species, nor are their needs necessarily the same. Most, however, are affected in some way by the American Iris Society and its regulations, whether members or not.

As a large section of the AIS, SIGNA will continue to work within the parent society to achieve the optimum solution to successful registration and recognition of the species and their progeny. The following are interim guidelines.

### Species cultivars

An iris species is not eligible for awards; a named and registered *cultivar* of a single species is. While many of us use *clone* and *cultivar* interchangeably, there is a significant difference. The *International Code of Botanical Nomenclature* governs the naming of natural (wild) plants; a collected wild specimen may be referred to as a clone. The *International Code of Nomenclature of Cultivated Plants* governs the naming of plants which are the result of selection or deliberate (rather than natural) crossing; its only subspecific rank is that of cultivar. The AIS registration instructions specify that names must conform to the rules of the International Horticultural Code.

A wild plant may be grown from collected seed or be a collected plant and still be a true specimen of its species. It's just not eligible for registration.

However, a specimen which seems to have unusual merit, even if only in the eyes of the beholder, may be *selected*, named, *vegetatively propagated*, registered and introduced into commerce, and become eligible for awards. The propagation method is extremely important.

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Species people frequently deal with irises grown from seeds. They may be perfectly good species or strains, but unless the product of an unbroken series of vegetative propagations leading back to a single plant, may not be registered. However, so long as the species is not in doubt, any individual plant may be selected from a seed-grown population and serve as the progenitor of a new cultivar.

Ideally, a species cultivar would be registered as, for example, *Iris laevigata* var. *albopurpurea* cv. 'Inspid Name' and its place in the order of things would be readily apparent to the plant world in general—whether AIS members or not.

Practically, that is not allowed by AIS. Despite precedents dating back to the "grandfathering" of species in the first two checklists, it is not currently allowed. Registrants must ignore *I. damascena* cv. 'Magnifica' (although typographically styled other than as shown here) in the 1979 checklist. They must ignore the registrations by the Aril Society International of *Ii. auranitica*, *camillae*, and *lycotis* in the 1969 checklist; that is not allowed. Note that those three are species, not cultivars. Should there ever be published a 1989 checklist, it presumably will show no such disallowed registrations. What is important for the immediate future is what is believed to be allowed now.

One which should be in that long-awaited book is what will probably appear styled as ASTRACHANICA KALMIKIJ, a registration by Bee Warburton of a cultivar of *I. astrachanica* [see SIGNA p. 1264] The typographical styling is that of AIS, not the prevailing botanical practice, but the name is, with little effort, recognizable as exactly what it is. *This is allowed.* If indicated, the natural subspecies might be inserted.

There is also considerable precedent for this style of naming, and Kay Nelson, AIS Registrar, has indicated that it is acceptable. SIGNA's checklist workers also endorse this form.

This is the preferred form of registration for a species cultivar. It is *not* all that should be specified at registration of irises which are hoped to be eligible for the Founders of SIGNA Medal.

Three additional factors must be considered. Following the cultivar name, the abbreviation "SPEC." should be added. This indicates the iris is a species cultivar and also makes its recognition for award eligibility much easier.

Next, the species (and lower rank, if applicable) should be included. For example, "*I. laevigata* var. *albopurpurea* 'Colchesterensis' sport" or such lesser level of detail as might apply. Even if the species name is part of the cultivar name, this should be included.

Third, the series should be included; i.e., "LAEV." in this hypothetical case. This is the least important of the three elements, and may not survive the full registration process, but should be included.

The species name need not be part of the cultivar name. POLLY SPOUT (*I. prismatica*) is a registered cultivar, and its classification is clear. This form is quite commonly used, but is not the currently-preferred form. The reason is simple. If it is not now possible to look into the checklist and find the decade's registrations of "*I. prismatica*" it would be helpful to be able to locate most of them under PRISMATICA [name].

## Species Crosses

The AIS registration instructions printed in the *Bulletin* indicate that the AIS custom of using part of the species name in the cultivar name will be continued. The example cited is SUSIMAC, from the cross *I. susiana* × IB-MAC. This is not an ideal form in all cases, however, when it is less than clear. The MAC above could well have been IB-MAC's parent, *I. macrantha*. Taxonomic revisions may also make such registrations less obvious, as in the case of 'Monwat'. However, the name of a species cross is a matter for the registrant alone to determine.

Exact eligibility rules should be published in the near future; at the time of this writing it is not known how the question of the eligibility for awards of tri-species or more advanced generation hybrids has been resolved.



Not considering such fine points for the present, there are still some things which should be done at the time of registration to ensure that the species cross is properly registered. The most important is that the abbreviation "SPECX." be placed immediately following the cultivar name. This, with the "X" standing in for the multiplication sign used to represent *hybrida*, distinguishes the cultivar from SPEC or species cultivars as well as from all other classes of hybrids.

As with any registration, the cross should be recorded in the level of detail sufficient to identify it clearly. If each parent is either a registered species cultivar or a validly published species or clone of such species (not necessarily a registered cultivar), the cross may be identified by a notation such as (pod-parent-name × pollen-parent-name). Where unregistered hybrid seedlings are involved, the parentage should be specified back to a named cultivar or collection number or wild species name, etc., on each side. This may be more detail than can be carried forward to the checklist, but will be part of the official record and could be retrieved for research should it be required..

In place of the species as the next element, the interspecies cross type should be listed, such as CAL-SIB or VERSI-LAEV. When a common abbreviation for the cross does not exist, the type of cross may be spelled out, as in ONCOCYCLUS-TRIPETALÆ (which is not in common parlance, however improbable its existence).

Should the interspecies cross involve only a single series, that may be listed next; i.e., TRIPETALÆ. As with the species cultivars, the goal is to give the Registrar as much information as possible, in as clear a form as possible, so that the correct registration may be effected without undue delay or misunderstanding, no matter who the Registrar or what his or her species expertise.

The fact that the checklist may present somewhat less information, particularly for involved parentages, than the registration carries does not prevent the detailed information being retrieved, so any error made should be in favor of giving too much, rather than too little, information.

*Species cultivars:*

*Speciesname [subspecificname]*

*Cultivarname*

+

*SPEC + (Section abbreviation)*

+

*"I. speciesname"*

*Species crosses:*

*Cultivarname*

+

*SPECX + (Cross abbreviation  
or Section)*

*All:*

*Parentage, back to registered  
cultivar or validly published  
species; if species, include  
origin (seed source? collected?)*

*Seedling number, if applicable*

*Follow any updated instructions  
which may be published by  
AIS or included on the  
registration form.*

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## New and Returning Members

—Florence Stout—

Welcome the following who have joined or rejoined SIGNA since the last newsletter:

Tom & Ellen ABREGO, 19105 N E Trunk Rd,  
Dundee, OR 97115

Barbara ASHMUN, 8560 SW Fairway Dr.,  
Portland, OR 97225

Lowell BAUMUNK, 10918 Sunshine Dr., Littleton,  
CO 80125

Peggy BEASON, R2 Box 584 Summerville SC  
29483

Thomas C. BURCH, 5800 Colonial Dr., Columbia,  
SC 29203

Sandra A. Childress, 8120 SW Maple Dr., Portland,  
OR 97225

Fred DADDI, 717 S Park Ave., Audubon, PA, 19403

Lucinda K. EBERT, 12880 Welton Lane, Poway, CA  
92064

Nass A. EL-EMARY, Pharmacy, U. of Assiut,  
Assiut, Egypt

Stephen F. FLYNN, 4115 Skillman, Dallas, TX  
75206

Venctia FREGNI, 6709 Guadalupe Tr.,  
Albuquerque, NM 87107-6203

Catherine Long GATES, 3033 Jefferson St.,  
Boulder, CO 80304

Neil GRANT, 28 Wenonah Ave, Rockaway, NJ  
07866

GRIFFIN'S GREENERY, P O Box 216, Hernando,  
MS 38632-0216

Carol L HAKKILA, 1284 Union Rd, Waldoboro,  
ME 04572

Mrs. Henry HUDSON, Jr., 275 Fawn Lake Dr.,  
Millington, TN 38053

Paul David JOHNSON, Rt 9N Box 0037, Upper Jay,  
NY 12987-9601

William G KOSTER, 1114 W William St.,  
Champaign, IL 61821

Shelley LYNN, 6562 Indiana Ave, Kent, OH 44240

Donna LINSLEY, 109 Benedict Rd., Pittsford, NY  
14534

Michael D MONNINGER, 4861 Brookhill Ter.,  
Riverside, CA 92509

Elaine NEWCOMB, 28 Fermier Rd., Willington,  
CT 06279

Claudia O'MALLEY, P O Box 399, Duvall, WA  
98019-0399

Margaret PARKER, P O Box 41, Castine ME 04421

Mildred PINNELL, Atlanta Botanic Gardens, P O  
Box 77246, Atlanta GA 30357

Steven & Brenda PLOEGSTRA, 3332 Sunnyside  
Blvd., Marysville, WA 98270

Terry RUBINCAN, P O Box 691, Delta Junction,  
AK 99737-0691

Maxine E. SCHMIDT, 12385 W 18th Dr.,  
Lakewood, CO 80215

Eric SCHELLACK, 162 Cherry Tree Ln., Cherry  
Hill, NJ 08002

Joseph M. SCHNEIDER, 31 Featherfall Pl., The  
Woodlands, TX 77381

Barbara SCHWINN, 754 Belvidere Ave., Westfield,  
NJ 07090

Roy & Janice SHAVERS, 249 Coffee Rd.,  
Petersburg, TN 37144

Mrs. James S. SMYTH, 19 Wanda Way, Martinez,  
CA 94553-9778

John TISDALE, Sterling Hill Rd., Lyme, CT  
06371

Mrs. Joan TREVITHICK, 86a Grantham Rd,  
Radcliffe-on-Trent, Nottingham, England  
NG12-2HY

Mark VENZKE, Little Bluestem, P O Box 1024,  
Hammond, IN 46325

Anita W. WARD, 8301 Cool Spring Ln., Adelphi,  
MD 20783

Michael WINKELMANN, 1314 Old Dutch  
Hollow Rd, Belleville, IL 62223

John ZAJAKALA, Rt. 2 Box 226, Beecher, IL 60401

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## Perhaps in compensation for all the ivy they eat?



My daughter who raises sheep finds that unmarketable wool makes a great mulch for irises. Apparently slugs don't like to crawl over the scaly fibers. It works especially well around Evansias, which are more vulnerable to slugs than bearded or Pacific Coast natives.

—Jean Witt

## Information sought from growers of *Pardanthopsis dichotoma*

Ms. Diana Beresford-Kroeger, P.O. Box 253, Merrickville, Ont. K0G 1N0, Canada, would like anyone who grows or has grown the vesper iris, *Pardanthopsis dichotoma*, to please contact her. She is writing a book and is looking for information on its growing condition and color forms.

## Seed germination method for *I. sintenisii* and others

My original start of *I. sintenisii* was a plant. Since then I have raised seedlings as well. I don't do anything special—I use the plant-'em-and-hope method: #2 cans with a number of holes punched in the bottom, ½ compost and ½ garden soil, planted in the fall, and just setting out all winter to take whatever weather comes. You might have to protect from dry freezes. Since SIGNA seed comes late, I do soak it. I write the number on plastic bread tags with waterproof pen, tie seeds and tag in a 3 or 4 inch square of old pantyhose, put all the packets in a jar of water on the kitchen counter and change the water every day for ten days. After soaking I plant as usual, but you can also put the seeds in Ziplock bags between damp paper towels and keep in the refrigerator (not freezer) until germination occurs, I haven't tried this part, but it is supposed to work.

—Jean Witt

## ≈ but not close enough

In the preceding issue's article, "Zhao's *Iris of China*," it was suggested that a third century B.C. book by Shen Nung may be the earliest record of Iris in the world. Long-time readers may recall the mention in a Jean Witt article on SIGNA pp. 278–279 of a tablet from Pylos (Greece, Mycenaean age) dating to about 1200 B.C. Page 238 begins a Roy Davidson article which mentions a Syrian species in bas-relief in the tomb of Thotmes III, which dates to c. 1500 B.C. Molly Price's *The Iris Book* contains a photograph of a fresco from a wall of the Palace of Minos at Knossos, approximately 4,000 years old. Other ancient representations of irises are known, but it may well be that the Shen Nung book is the earliest record in China. ❀

The Editor's note accompanying the Davis and Jury article on the Series *Unguiculares* was written before the Editor learned from correspondence in connection with ordering a copy of Rodionenko's *Genus Iris* that the BIS had opened an American bank account. Remittances may now be made in U.S. dollars to The Fleet Bank, Bank by Mail Department #11, P. O. Box 647, Nashua, NH 03061-0647. The British Iris Society and its account number, 9352687046, should be clearly identified as the account to which the funds should be deposited. ❀

## And don't forget the Species Group

When joining or renewing with the BIS, members have the opportunity as well to join its various sections. Most likely to appeal to species enthusiasts are the BIS Species Group and the Siberian, Spuria, and Japanese Group (including Pacificas and Water Iris). The July, 1992, bulletin of the Species Group contained a report by C. M. Morris of superior root growth of Evansias and other irises when using *coir* (coconut compost), as well as a warning of its deceptive dry appearance.



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## Editorial

Several changes should be evident in this edition; others are not as readily apparent. Three new and hopefully regular features debut in this issue: Dr. Richard L. Doult is the Feature Editor for the non-Iris Iridaceæ, and SIGNA Past President Elaine Hulbert is Feature Editor for the Evansias. A Feature Editor for The Water Irises is still needed; the search was postponed so that other work on this issue could be done, but with the keying of this last page, is reactivated. Please support these new Feature Editors with your ideas, your stories, your artwork and photographs, and most of all with your encouragement.

The unconscionable tardiness of this issue is due in large part to the Editor's hands rebelling against thirty-nine years of pounding keyboards of one variety or another. They simply cannot tolerate much of it.

That restriction has been overcome through the acquisition of a scanner and OCR software which, although in all known forms is still far from perfect, does an extraordinary job when fed a diet of clean, crisp copy. Please do not hesitate to send hand-written copy, but if you use a typewriter or printer, please try to use a reasonably fresh ribbon and plain white paper. Opacity is not a requirement, and even draft-quality dot-matrix copy is readable (letter-quality is vastly superior). A special award should go to Samuel N. Norris for his flawlessly clean, crisp copy, which read more quickly than some laser printer output, error-free.



*If I could get my printer to work underwater,  
I'd volunteer to edit the Water Irises feature.*

Several members have inquired into the possibility of making issues available in ASCII text form. Perhaps this winter will offer the time to work on such a project; perhaps Adobe Systems will release Carousel to a waiting world. For the present, the fact that the vast majority of the text never exists in pure text form or any form other than Quark XPress's own, and the extensive use of "expert set" type characters, ligatures, specially-purchased non-standard font suitcases, and mathematical fonts make it a translation nightmare.

*Colophon:* original mechanicals for SIGNA are produced on a Macintosh computer. Page layout and word processing are done in Quark XPress; much of the text for this issue was scanned directly into Quark XPress documents with Caere's OmniPage Direct optical character recognition software. Graphic elements are scanned on a Microtek scanner and prepared for publication in Adobe Photoshop. The two photographs of *I. sanguinea* var. *pumila* and the one of *Babiana rubrocyanea* are reproduced using conventional photomechanical transfers. The cover map is from the Map Art collection, MicroMaps Software, and modified in Aldus Freehand. Special thanks are due to friend and graphic artist Brian O'Shea for having the patience, persistence, and Freehand mastery to remove the few borders which were left on the preceding issue's cover. To the Editor's satisfaction, it wasn't easy. A promise: Radio Free Iris is not going to reappear on the map. All typefaces used are licensed to the Editor by commercial foundries; the Caslon-based ornamented capitals used with text are distributed as freeware on major BBS's; they are Zallman Caps, by David Rakowski of Insect Bytes. Sprinkle ©™ liberally throughout.

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