P A E O N I A

Vol. 21, No. 1 March, 1990

EDITORS: Chris and Lois Laning
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A?P.S. SEED DISTRIBUTION:

From Derk L. Irvine, New Zealand - Lutea-Delavayi (light red)
(only a few) Lutea-Delavayi (lemon with red center)
Mrs. J. R. Allan, New Zealand - LUDLOWI
Irene Tolomeo, California - Herbaceous Hybrids.
Note: Southern peony growers, these seeds come from a warm climate!
Caprice Farm, Oregon - P. peregrina
Domoto, California - a few T.P. seeds left

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PEDIGREE PEONY SEED FOR SALE -- December, 1990

Lactiflora	10/$1.00	Derived from Rose Shaylor, Kakoden, others.
Lactiflora	10/ 2.00	Der. from "Roger's Candy Striper", double white heavily streaked red on outer petals.
Peregrina (lobata).....	10/ 1.50	Species.
Tenuifolia hybrids	10/ 1.50	Der. from Laddie.
Herbaceous hybrids	10/ 2.00	Includes cream-yellow, salmon-pink shades.
Moutan	10/ 3.00	Only of Rock's Variety ancestry.
Shrub hybrids	10/15.00	Der. from Chinese Dragon, Golden Era, others.

Hand pollinated but not bagged, therefore pollen parent not guaranteed. Pedigrees sent. Order ANYTIME , but orders received by mid-May allow for hybridizing plans better suited to individual preferences. State type of peony, colors desired, permissible substitutes, etc. Payment can be made AFTER receipt of seeds to prevent credit carry-overs or refunds. $1 postage ($2 overseas).

William J. Seidl, 732 S. 19th St., Manitowoc, Wisconsin 54220, U.S.A.

14 Feb. 1990

Dear Chris,

Enclosed is some material for the Newsletter, including
(1) an outline of Stern's classification of the genus Paeonia, with notes giving the name-equivalents used by Saunders,
(2) an illustration-drawing,"The Roots of Paeonia", and
(3) an explanation of the illustration, which concludes with another outline on peony classification. It has no title but it could be called a Hybridizer's Classification (HC) since it lumps species together by ploidy and interfertility.

I made the Stern outline and accompanying notes as a single-page, quick-reference aid to better understand various articles about peony hybridizing. It was supposed to end there. However, upon completion, some observations were noted. Four of Stern's "groups" had only one species-member; multi-species groups usually had both diploid and tetraploid members; and some species were defined on very flimsy evidence, defying my concept of what constitutes a species. For example, bakeri is known only in gardens, is described from one plant, and admittedly could be a form of arietina. Mollis is known only in gardens, apparently sterile, and tetraploid. How could a tetraploid species be sterile? It sure would become extinct fast! What ever happened to interfertility of species-plants, reproduction of common distinctive characters in the progeny, and interfertility between them and their parents, as a test for species-status? On similar evidence we could "discover" and define a flock of new species in our gardens. Since we are without botanist-taxonomist credentials, our discoveries would be ridiculed in every Ivory Tower between here and the Urals. It would be called a hoax. But Sir Frederick Stern can get away with it.

Besides classifying plants, taxonomists sometimes classify each other as "splitters" or "lumpers". Stern surely was a splitter. I suppose a taxonomist gains prestige when he discovers a new species, and Stern has obtained that prestige by cluttering up the Paeonia landscape with imaginary species. Too bad his discoveries also included the lactiflora name to displace albiflora.

At any rate, these thoughts provoked me to look at all the species with a suspicious eye. As a joke I thought I'd embark on world-wide trek covering all the peony native habitats, without going beyond the range of my TV remote, after which I'd compose my own "Arm-Chair Study of the Genus Paeonia". A.P. Saunders was a good traveling companion as he had early-on thrown up his hands at making order out of the nomenclature botanists were dishing out. Out of my travels evolved the drawing of peony roots to illustrate geographical distribution of the species. A root for each species would've made too much of a tangle and, since so many were ill-defined, I concentrated only on well-defined ones and major groupings. This lead to considerable thought about evolutionary development of the groups and subsections, and finally the lumping of five Stern groups into the WMR root, the "Wittmascularussi Complex". On my first draft it was labeled "Mascula and Di-mascula", that group-name being the earliest dated, 1768, of the five.

The presence of diploids and tetraploids in so many of Stern's groups reminds one that the diploids would always have preceded the tets in development. When a diploid population gives rise to a tet population, the tet may eventually supplant the other. Or both may continue to develop and diverge into the present-day species, their common origin obscured by their accumulated differences. But evolution is a continuing process, and even now there may exist diploid and tet populations of mlokosewitschi, say [as was suggested in an earlier Halas article], but the tet population has not survived long enough to evolve a differing phenotype. And indeed it may die out before doing so. This birth and death of a tet population may occur many times before climatic changes

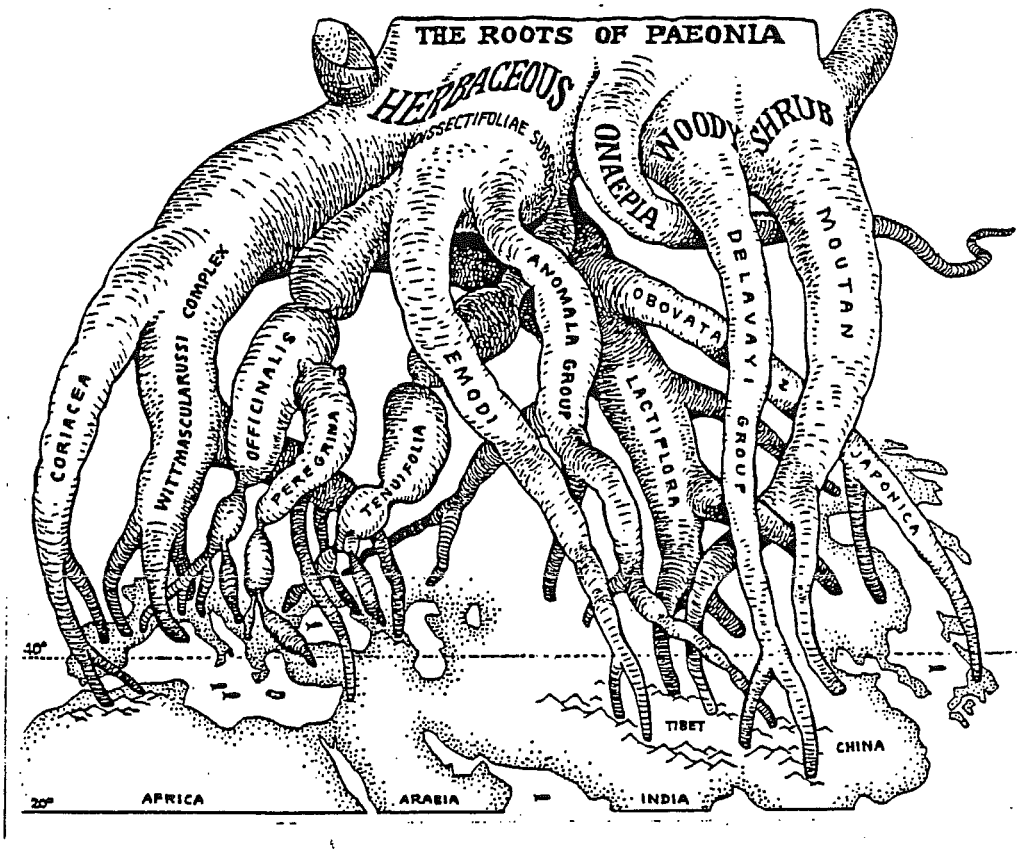
and environment finally favor the continuing development of the tet population and a new species.

Which raises the question, what is the diploid origin of the tetraploid officinalis-peregrina species? Does it share a distant common ancestor with lactiflora? In breeding they seem to have some affinity for each other despite differences in ploidy. Or is it less remote--- say with P. clusi, the diploid, white species of the island of Crete? The tet population may have originated on the mainland, supplanting the diploid form, while the island-isolated diploid form continued to survive in the absence of such competition.

So what started as a simple one-page outline and a joke has developed into a bit more serious project. My conclusions are tentative, my theories could well be half-baked, and readers ought to treat them with the same suspicion I've treated parts of Stern's classification. Since I don't have an impressive array of letters to put after my name (except BS), they will do so more readily. Perhaps one day advanced taxonomic techniques and chromosome analyses combined with new geological discoveries will provide definite answers.

Bill

Bill Seidl



The reduced-size illustration above is the same as the larger one except for the way the lactiflora root is drawn connected to the crown.

Genus PAEONIA: HERBACEOUS SECTION. Stern Classification. (The Peonies, Wister)

Sir Frederick Stern divides the herbaceous section [PAEON] into two subsections, 13 groups, and a total of 27 species and 12 botanical varieties. In the summary below, the group names are the same as the underlined species name in each group. The 12 variety-names are indented. The numbers 10 and 20 indicate the chromosome counts, diploid or tetraploid. Bracketed entries are from Peyton's article, 1953, reprinted in the APS 75 Years book, p171.

I - FOLIOLATAE Subsection					
1	mlokosewitschi	10	5	mairei	--
	wittmanniana	20		oxypetala	--
	nudicarpa	--			
	macrophylla	20	6	arietina	20
				orientalis	--
2	cambessedesi	10		rhodia	10
	russi	[?] 20		bakeri	20
	reverchoni	[20] --			
	leiocarpa	20	7	broteri	10
3	mascula	20	8	coriacea	20
	daurica	[10] --		atlantica	--
	banatica	--			
	kesrouanensis	--	9	lactiflora	10
				tricocarpa	--
4	obovata	20		emodi	10
	willmottiae	20		glabrata	--
	japonica	10			

II - DISSECTIFOLIAE Subsection		
10	peregrina	20
11	officinalis	20
	clusi	10
	humilis	20
	villosa	20
	mollis	20
12	tenuifolia	10
13	anomala	10
	intermedia	10
	veitchi	10
	woodwardi	10

Stern's classification differs from views of other botanists, and he drops some species-names commonly used in the literature, especially in accounts of Prof. Saunders' hybridizing work. Beginning with Group 1, here are some of the differences and changes (Stern usage given first):

witt. nudicarpa = the wittmanniana usually grown in gardens; glabrous carpels.
witt. macrophylla = macrophylla, in the pedigree of Saunders' "quadruple hybrids", others.
russi leiocarpa = corsica. Saunders' PICOTEE is from corsica x macrophylla.
mascula = corallina. Saunders #8969 is from officinalis ros. pl. x corallina.
daurica = triternata. Stebbins considered this a var. of mloko with which it was inter-
obovata willmottiae = willmottiae. Saunders considered this more closely ⌉fertile.
related to macrophylla. His SILVER DAWN, willmottiae x macrophylla, is probably extinct, but named descendants are SUNNY GIRL (Bul.256), DAWN GLOW (Bul.259), GREENLAND
lactiflora = albiflora; sinensis; the Chinese peony. ⌉(Bul.270).
emodi. Both Saunders and Huth thought this more closely related to anomala. Saunders used this as the pollen parent of both EARLY and LATE WINDFLOWER strains and WHITE
peregrina = lobata, or officinalis lobata. ⌉INNOCENCE.
anomala intermedia = intermedia.
veitchi = beresowskii(yi), or anomala beresowskii, the SP of LATE WINDFLOWER (p95).
veitchi var. woodwardi = woodwardi, PP of EARLYBIRD, and SP of E. WINDFLOWER (per correction by Silvia Saunders, 1972, reprint Paeonia 18-2.) Stebbins considered woodwardi, veitchi, and "beresowskii" all varieties or forms of anomala and blooming in that order.

Saunders hybridized with decora and decora alba, which are forms of officinalis and/or peregrina.

THE ILLUSTRATION: THE ROOTS OF PAEONIA

The illustration was made to enable the reader to quickly obtain an overall grasp of the genus with respect to its natural geographical distribution and taxonomy. Stern's classification was the starting point in deciding the overall structure, but it was NOT followed in several details. To understand the differences, one should compare the illustration with the outline of the Stern classification of the herbaceous section during the following explanation.

The crown of the peony is divided into two major parts, the left part giving rise to the herbaceous section of the genus, the right part to the woody-shrub section. Stern places the American species, brownii and californica, in a third section called ONAEPIA. Since these are herbaceous in habit but have "very prominent discs" like the shrub peonies (Wister, p15), this section was positioned between the herbaceous and shrub roots. It may be viewed as a possible evolutionary link between the two. The root for the Delavayi Group (delavayi, lutea, potanini) was placed to the left of moutan because its members show some herbaceous tendencies, and they lack the sheath of moutan (Wister, p149). Its position next to ONAEPIA also seems appropriate.

Are there any other links between the two major sections? Two come to mind. (1) Tenuifolia and the Delavayi species have the narrowest leaves of their respective section, and both produce stoloniferous shoots. To show a possible evolutionary link, the underside of the Delavayi root was drawn to "flow" into the tenuifolia root. The upheaval of the Himalayas and other mountain ranges could have separated the ancient ancestors, causing separate development thereafter. (2) The geographical range of lactiflora is similar to that of moutan, so its root connection to the crown was drawn underlapping the Onaepia-tenuifolia-delavayi juncture to indicate a possible common origin. Ancient Chinese gardeners thought their forebears had bred the moutan from the lactiflora. They may have been close to the mark, except that The Master Hybridizer had intervened with his timeless creative evolutionary process. Also, intersectional crosses have been the most successful using lactiflora, rather than any other herbaceous species or hybrid. [The underside of the moutan root was drawn "flowing" into the lactiflora root to suggest a similarity with the delavayi-tenuifolia connection. If this were truly the evolutionary story, it would explain the extreme dissimilarities of the two shrub species (moutan and delavayi) as exhibited by their phenotype and relative lack of interfertility.]

From the herbaceous part of the crown, a large secondary root represents the subsection Dissectifoliae. Peregrina (lobata) is shown attached to officinalis, a relationship commonly accepted before the Stern monogram was published in 1946. [Stern does not even put them in the same group; and four of his "groups" have only one member.] Emodi is transferred from the Lactiflora Group to the Dissectifoliae Subsection, closely related to anomala. In Saunders' hybridizing it set seed more readily with anomala (the WINDFLOWER strain) than lactiflora. A comment in Wister (p25) seems to protest this, saying that nearly one thousand miles separated the two, with no note that the distribution of the Anomala Group itself extends from Szechuan, west China, to Russia, a modest four thousand miles?? [This was the most difficult root to illustrate.] Their common origin can be explained as follows:

> The ancestral forms were growing in the dry interior of the Asian continent, where narrow leaves, swollen storage roots, and early-ripening foliage were traits developed by the peonies of that time in response to environmental conditions. When continental drift sent India crashing into Asia, thrusting up the Himalayas, the peonies isolated in the mountain valleys adjusted to the wetter conditions by growing taller, developing relatively wider leaves and less bulbous roots, i.e. the emodi species.

This leaves the species of Eurasia from the Atlantic Ocean to the Caucasus Mts. They have been so much "split" by Stern that I have "lumped" them together radically. The "Wittmascularussi (WMR) Complex" combines all the species of his Groups 1, 2, 3, and 6 & 7. (Group 5 is transferred to the Lactiflora Group.) The diploid and tetraploid forms could comprise two subgroups. Coriacea merits a root for itself because its hybrids with lactiflora (THE LAVENDERS Strain) and officinalis (ECLIPSE) are sterile, thus indicating a distinct species status. It is still attached to the WMR-Complex to indicate possible fertility with members of that complex.

The changes and simplifications explained above are summarized here in outline form. Bracketed terms are those equivalent names used by Saunders and peers. It represents the hybridizer's viewpoint. Names in all-caps are SPECIES names, lower caps are subspecies or botanical varieties and forms... [considered as such, for now].

HERBACEOUS SECTION

I - FOLIOLATAE Subsection

DI-WITTMASCULARUSSI	10
mlokosewitschi	10
cambessedesi	10
daurica [triternata]	10
rhodia	10
broteri	10
WITTMASCULARUSSI	20
wittmanniana	20
w. nudicarpa [wittmann.]	*20
w. macrophylla [macro.]	20
russi	20
r. reverchoni	*20
r. leiocarpa [corsica]	20
mascula [corallina]	20
banatica	--
kesrouanensis	--
arietina	20
a. orientalis	--
bakeri	20
CORIACEA & atlantica	20
DI-OBOVATA (japonica)	10
OBOVATA & willmottiae	20
LACTIFLORA [ALBIFLORA]	10
tricocarpa	*10
mairei	*10
oxypetala	*10

II - DISSECTIFOLIAE Subsection

DI-OFFICINALIS (clusi)	10
OFFICINALIS	20
peregrina [lobata]	20
humilis & villosa	20
mollis	20
[decora, decora alba]	*20
TENUIFOLIA	10
EMODI & glabrata	10
ANOMALA	10
intermedia	10
woodwardi	10
veitchi	10
beresowskii	10

WOODY SHRUB SECTION

MOUTAN (SUFFRUTICOSA)	10
DELAVAYI [delavayi]	10
lutea	10
ludlowii (lutea var.)	10
potanini	10
trollioides (potanini var.)	10

* probably

↑ A HYBRIDIZER'S CLASSIFICATION ↑

The WINDFLOWERS and DISSECTIFOLIAE HYBRIDS

(Bill Seidl)

From the information in Wister's book, p95, and Silvia Saunders' 1972 letter to Roy Pehrson, reprinted in Paeonia 18-2: 4-6, June 1987, and using the Stern classification of the herbaceous peonies, I summarize the following:

STERN CLASSIFICATION:

Group 13: Anomala Group

P. anomala
var. intermedia
P. veitchi (=beresowskii)
var. woodwardi

STEBBINS CLASSIFICATION:

P. anomala		
var. woodwardi		1st to bloom
var. veitchi		2nd " "
var. beresowskii	↓	3rd " "
(?) intermedia		(?)

REATH NURSERY LIST, 1971; not listed in recent calalogs:

SPARKLING WINDFLOWER (Silvia Saunders 1971).

Dainty nodding red windflowers swaying gracefully on thirty-six inch stems. This rare Early Windflower F-2 plant is a delightful garden addition it should be of interest to the hybridizer as well. Picture if you will, a dainty Red Early Windflower to supplement the very popular Windflowers in the garden as well as cut blooms. Only a few divisions available at $15.00 each.

Prof. Saunders raised 14 seedlings numbered 12591 thru 12604, calling them the EARLY WINDFLOWER strain, from the cross:

(Stern) P. veitchi* var. woodwardi x P. emodi.

He also raised 22 seedlings, numbered 12212 thru 12233, calling them the LATE WINDFLOWER strain, from the cross:

(Stern) P. veitchi x P. emodi.
(Saunders) anomala beresowskyi x emodi.

I like the Stebbins' treatment of the relationships, and think of the Windflowers in broader terms as anomala-emodi hybrids.

At any rate, there were 3 dozen clones, and the order of bloom, EARLY vs LATE (8-10 days), agrees with that of the respective seedparents.

One of the F_2 seedlings originating in the Saunders nursery was named SPARKLING WINDFLOWER, a light red, and introduced by the Reath Nursery in their 1971 list. In 1976 I used its pollen on LADDIE and obtained about two dozen plants, flowering about 1981. Since both parents are similar in flower and foliage, and since I probably did not bag the cross, I was never sure --- until this past season --- of any true WINDFLOWER parentage. The cross was labeled LSW and the best seedlings LSW-1 thru LSW-7. All were single reds with dissected foliage. I have been sib-crossing and backcrossing to LADDIE, selling the seeds as "Tenuifolia Hybrids", with the note "Diploids ??".

This past June while at the Reath Nursery, another Sunday visitor (one of many) asked me the name of the plants he was admiring for their airy, fern-like foliage. While I hemmed and hawed, Scott Reath stepped forward and said they were the Windflowers, Early and Late. "Of course!" I said, slapping myself. (I had not grown them in my garden for a decade.) With this fresh in my mind, and while sib-crossing the LSW seedlings the next day, I suddenly realized the foliage of LSW-3 was definitely WINDFLOWER-like, the only one of the two dozen siblings. [I had early-on dubbed it "Red Tulip" for its long-held, cupped form, then later crossed off the name in my gardenbook.] I halted by unbagged sib-crossing and made controlled crosses both ways with mainline tet hybrids (mostly of the Reath line out of SALMON DREAM) and obtained enough seeds to believe LSW-3 is probably a tetraploid. Then I recalled Chris's 1987 article on the WINDFLOWERS

* #6516 "Species Tibet": Saunders notebooks.

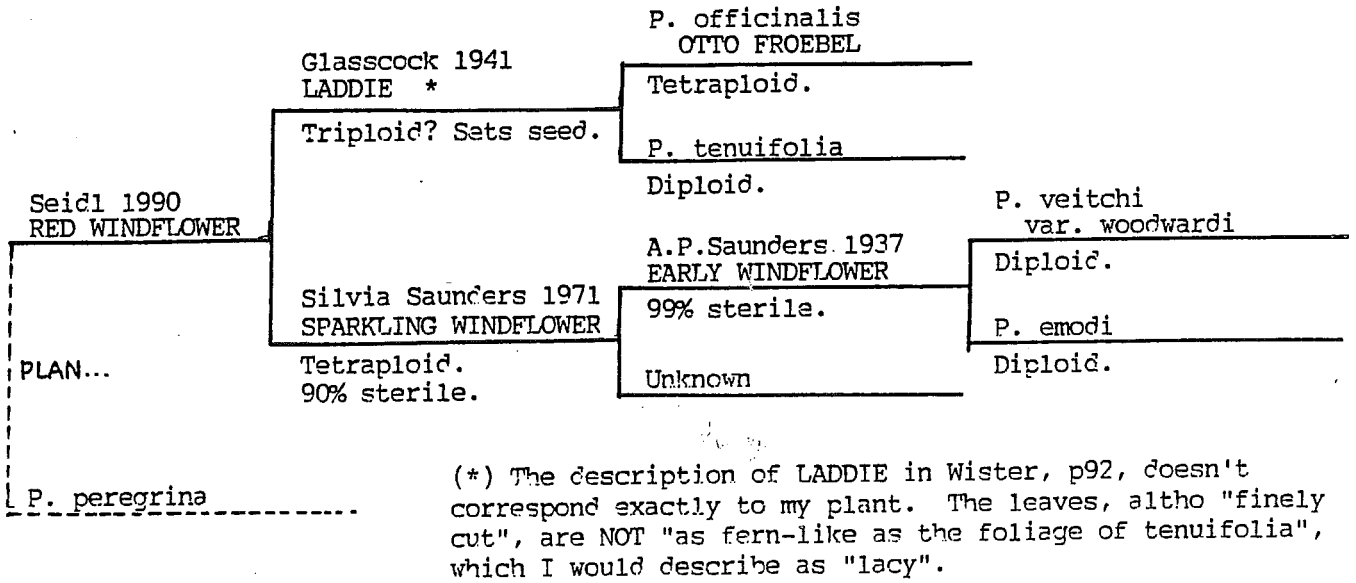
and, on rereading it, was pleased to see that Silvia Saunders had ID'd SPARKLING WINDFLOWER as a tetraploid, from a chromosome count. This certainly suggests using it back on LSW-3 to obtain a definite WINDFLOWER fertile strain.

I have since registered LSW-3 as RED WINDFLOWER, altho its anomala-emodi genes have been diluted by officinalis-tenuifolia genes from LADDIE. This makes it a quadruple hybrid, but far different from the famous Saunders' "quads". Three of the four species are from the Dissectifoliae subsection (Stern), and if one placed emodi in that subsection (as Huth and Saunders would do), then 'RW' is a 100% Dissectifoliae Hybrid. However, it is registered simply as an "herbaceous hybrid" (as to geno-TYPE), not wishing to upset those slow to accept my creative nomenclature. The only Dissectifoliae group name (Stern) not represented is peregrina, so a cross of RW x peregrina, or RW x GOOD CHEER, would yield Quintuple Dissectifoliae Hybrids! Certainly an interesting hybrid group to develop, especially for foliage. For this purpose I obtained, last fall, Woodwardi from Al Rogers (Caprice Farm Nursery), the rosea and alba forms of officinalis from the Andre Viette Nursery, and anomala from Ben Gilbertson via Roger Anderson. Now if only they will all grow....

WINDCHIMES should certainly enter the strain, if its sterility can be overcome; likewise VIKING VANGUARD. The latter sets seed. It's a lacti-mloko-emodi hybrid, but emodi-like traits dominate. I once thought Roy Pehrson had mislabeled this, and that it was a tenuifolia hybrid, until Chris pointed out WINDFLOWER-leaf similarities. I shall also be leaning on Chris for pollen from his fertile F_3, the one he has a whole row of. If it takes well on RW I'll want a half-dozen divisions in the fall.

The WINDFLOWERS have very neat, precise anther-rings, and one can't help speculating on the nature of the doubling or anemone form if these could be transformed into petals.

In his 1987 article Chris remarked that the plants are distressingly large for the size of the flower. RW is shorter, about 2 feet, and has lost some of the character of the other Windflowers. Its greater value is as a breeder plant than a finished garden plant. We need the 3' stems, thin and wiry, and small flowers to sway gently and gracefully in the wind. Perhaps the answer is to select for more laterals (a trait of the emodi species), but so far we haven't had the seedling populations to afford that luxury. There is an attractive picture of emodi in the AHS Encyclopedia of Garden Plants, p198, but it is too closely cropped to appreciate the whole plant. The entry on page 529 gives the height as up to 4 feet. WHITE INNOCENCE continues to be a dead-end in hybridizing. [I have no RW divisions to distribute, but will advertise RW seed for sale, supply permitting, in the September Paeonia.]



(*) The description of LADDIE in Wister, p92, doesn't correspond exactly to my plant. The leaves, altho "finely cut", are NOT "as fern-like as the foliage of tenuifolia", which I would describe as "lacy".

A TEST FOR ANYONE UNFAMILIAR WITH THE GENUS PAEONIA AND THINKING ABOUT JOINING THE A.P.S.

(1) If a peony develops hardy, woody stems, forming a clump 2-5' high, what would you call it?

a) a shrub peony
b) a tree peony

The genus is divided into two sections: herbaceous and shrub. Below are listed some species within each section:

HERBACEOUS SECTION	SHRUB SECTION
lactiflora	moutan
officinalis	lutea
tenuifolia	delavayi

Consider the hybrids that would result from these crosses:

1- lactiflora x officinalis
2- lactiflora x (offici x tenui)
3- lutea x moutan
4- delavayi x moutan
5- lutea x delavayi
6- lactiflora x moutan
7- lactiflora x (lutea x moutan)

(2) The progeny of crosses 1 and 2 are called herbaceous hybrids. What would you call the progeny of crosses 3,4,5?

a) shrub hybrids
b) moutan hybrids
c) lutea hybrids
d) delavayi hybrids

(3) What would you call the progeny of crosses 6 and 7?

a) herbaceous hybrids
b) shrub hybrids
c) intersectional hybrids
d) Itō hybrids

(4) Here are some Japanese names, correctly spelled in accordance with the established system:

Kyōto	Yamamoto	Hokkaidō
Tōkyō	Mariko	Hiro hito

Which of the following is correctly spelled?

a) Itow
b) Itō
c) Itoh
d) Itoe
e) Itough
f) Itoa

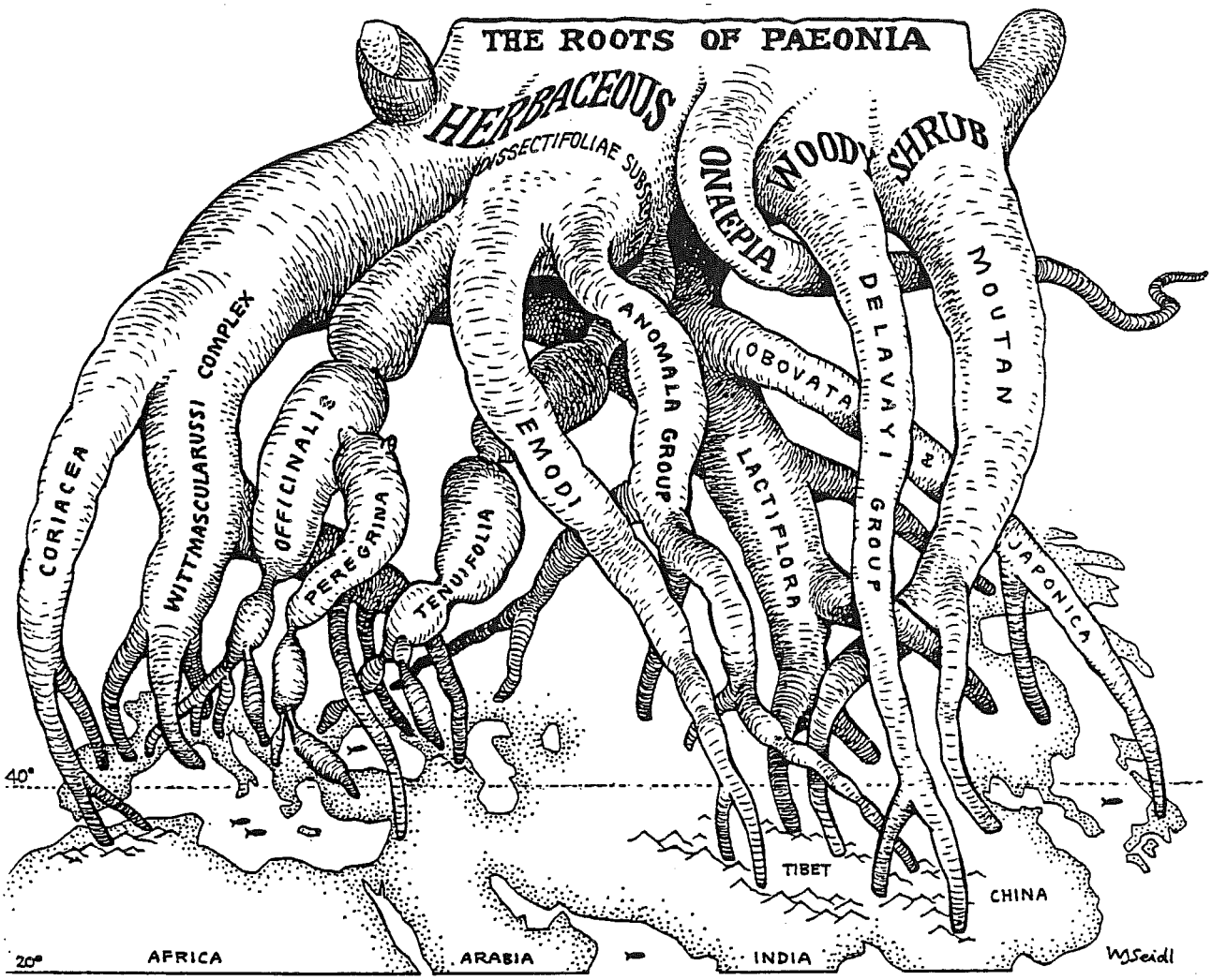
(5) Below are the registered names of five hybrid cultivars, each followed by the originator's name. Which is called an Itō Hybrid?

a) BARTZELLA (Anderson)
b) GARDEN TREASURE (Hollingsworth)
c) YELLOW EMPEROR (Itō)
d) LAFAYETTE ESCADRILLE (Pehrson)
e) ROSE FANTASY (Seidl)
f) All of the above

If your answers were 1a, 2a, 3c, 4b, 5c, then you made sensible choices and deserve an "A". But in the eyes of the APS you failed. The correct "official" answers are 1b, 2c, 3d, 4c, 5f.

You may still want to join the APS just to find out why; but I can save you the trouble. The official answers are correct because they are "established" and no other reason need be given. They are inscribed in a concrete Wall of Error and Outmoded Usage which APS officialdom is sworn to preserve forever. If you dissent from the hard line, comrade, and dare to chip away at the Wall, be prepared for rejection. Your voice will be stifled. Glasnost and perestroika are not to be tolerated.

Mountains will be washed to the sea, my friend, before the APS will change or bend.



DEAR PAEONIA READERS:

I feel that Bill Seidl is critical of our lack of scientific correctness in nomenclature and expects us to change. He seems to be a purist. Being right is not a goal to be worshiped. To be "dead right" is sometimes counterproductive. However, this March issue of Paeonia is Bill Seidl's issue so nothing will be deleted.

Bill has put in a good many man hours into this issue providing good information, especially for the hybridist, and many of his peony clones can expand our gene pool.

- Chris