Lilacs

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of the International Lilac Society

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INTERNATIONAL LILAC SOCIETY is a non-profit corporation comprised of individuals who share a particular interest, appreciation and fondness for lilacs. Through exchange of knowledge, experience and facts gained by members it is helping to promote, educate and broaden public understanding and awareness.

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— Table of Contents —

Editor's Note

With joy we dedicate this fifteenth installment of LILACS to the honor of Father John L. Fiala who at long last we recognize for the motivational force that he so selflessly has showered upon the International Lilac Society in its founding (I almost said foundling) years, a guidance which thankfully has continued for a decade and a half to these very days and hopefully will extend into the distant future. It is, indeed has ever been, his fervent wish that everyone "into" plants, be they simple plant lovers, practical gardeners, searching horticulturists, plant breeders, catch his enthusiasm and appreciation for the lilac, harbinger of Summer.

In 1980 he graciously invited the Society to Falconskeape to inspect and enjoy his glorious seedling lilacs. A severe thunderstorm struck Medina a few days earlier and the plants were not really in shape for exhibition, nevertheless we did see gorgeous lilacs in a handsome setting. It is out of this environment that has come many, if not most, of our 21st century 'Rochester' strain of lilacs. (See listing elsewhere in this issue under "Falconskeape Lilac Novelties).

Traditionally in Europe the youngest son without patrimony is given to the Church. This is, however, not the custom in America. The "boy", as his father called him, entered seminary at Detroit concurrently with matriculation at the University of Michigan at Ann Arbor. After three weeks he took his orals, passing with a grade of 99.8. From an autistic childhood John grew into a brilliant scholar and was sent to St. Mary's seminary at Cleveland. He completed his education at Fordham University fulfilling the requirements for the doctorate in clinical psychology. He was ordained a Roman Catholic priest in May 1948 and continued to teach clinical psychology at John Carroll University for thirty years. He also organized and served as the first principal of the Central Catholic High School, Cleveland, a prestigious school whose graduates are sought by colleges far and wide.

However, while yet in seminary he incurred an accident to his eye which immobilized him for six and three months at different periods (such being the therapy). This incident threatened his clerical career and the precocious seminarian was on the verge of turning to horticulture as an alternate vocation.

As a lad he was introduced to horticulture through summers spent at his maternal Aunt Mary's garden where she grew catalogfuls of annuals which he was required to set out, water and weed all summer long. At age 10 he was allowed ten acres of his father's farm to set out an orchard. He parlayed this land into larger holdings which resulted eventually in "Falconskeape", the 120-acre

This Fifteenth Issue
is respectfully dedicated to

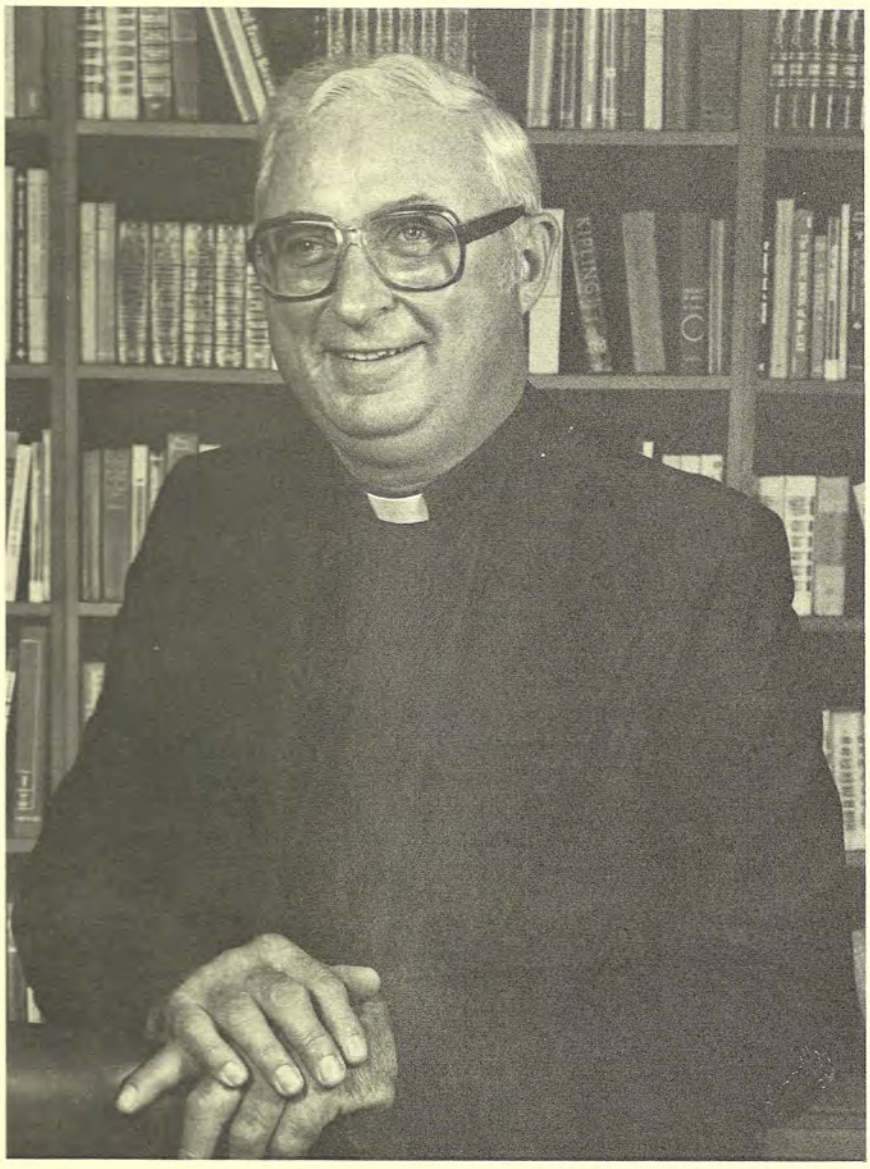

Photo used with permission of Olan Mills Studio

Father John L. Fiala

country place where ILS held its ninth annual meeting in 1980. There about the house and barn, around the 20-acre impounded lake and adjacent fields grows the largest private *syringetum* in the world rivalled only by the publicly owned National Arboretum's collection which is managed by the United States Department of Agriculture. Not only do rare species and varieties of lilacs abound, but also may be seen the extensive breeding work of an industrious and perceptive geneticist, seventy percent of whose crosses carry the genes of 'Rochester' in them.

At Elyria, Ohio, there lived a physician who loved lilacs and roses. He knew the prominent rose and lilac breeders personally and grew their seedlings. He also raised his own seedling lilacs. When he died twenty or more years ago his garden fell into ruin and his precious plants were scattered far and wide. There was no lilac society for him to bequeath his favorite plants to. It was this sorry state of affairs which lead directly and promptly to the organization of the International Lilac Society Corporation at Bayard Cutting Arboretum in May 1970. The prime mover? None other than the Reverend Father John L. Fiala, then pastor of St. Leo's Parish at Parma, Ohio.

During the following week Fr. Fiala responded to an invitation to come to Rochester and visit Highland Park and see its internationally renowned lilacs. Dick Fenicchia, superintendent of horticulture, and I met the plane from Cleveland and we drove to the park department's nursery where Dick's 'Rochester' F_1 seedlings were growing. Dick and I stood aside while the priest-geneticist stood transfixed in wonder and amazement at the glory he beheld. For long minutes he was motionless studying the form and color of the corner plant, and turning he explained to us the marvels which he could see before him and the possibilities ahead. (The convention issue of the *Newsletter*, dated May 19-20-21, 1972, contains the story and description of six 'Rochester' -strain lilacs.)

The list contains lilac cultivars bred at Falconskeape.

Falconskeape Lilac Novelties

S. x hyacinthiflora 'Alice Chieppo'
'Mary Short' ('Pocahontas' x 'Esther Staley')
'Vesper Song' ('Pocahontas' x 'Marechal Foch')

S. vulgaris
'Albert F. Holden' ('Sarah Sands' x 'Reaumur')
'Aloise' ('Flora' selfed)
'Arch McKean' ('Agincourt Beauty' x 'Rochester')
'Atheline Wilbur ('Rochester' x 'Edw. J. Gardner' x 'Rochester')
'Avalanche'
'Blue Beard' ('Gismonda' x 'Rustica')
'Blue Delft' ('Mrs. A. Belmont' x 'Rochester')
'Bluets'

'Blue Giant' ('Flora' x 'True Blue')
'Drifting Dream' ('Rochester' x 'Rochester' seedling)
'Dr. Joel Margaretten' ('Prodige' x 'Rochester')
'Elsie Lenore' ('Sensation' selfed)
'Emery Mae Norweb' ('Gismonda' x 'Flora')
'Gertrude Clark' ('Rochester' x 'Rochester' seedling)
'Glacier' ('Gismonda' x 'Flora' x 'Rochester')
'Holy Maid' ('Macrostachya' x 'Rochester')
'Hosanna' ('Gismonda' x 'Rustica')
'Lalique' ('True Blue' x 'Rochester')
'Miss Muffet' ('Mrs. Edward Harding' x 'Macrostachya')
'Lourene Wishart' ('Rochester' x 'Edw. J. Gardner')
'Lullaby' ('Rochester' x 'Rochester' seedling)
'Marie Frances' ('Edw. J. Gardner' x 'Rochester')
'Midnight' ('Agincourt Beauty' x 'Violet Glory')
'Mollie Ann' ('Rochester' x 'Violet Glory')
'Mother Louise' ('Carley' x 'Flora')
'Munchkin' ('True Blue' x 'Rochester')
'Patrick Pesata' ('Rochester' x 'True Blue')
'Pauline Fiala' ('Sensation' x 'Flora')
'Pixie' ('Rochester' selfed)
'Porcelain Blue' ('Rochester' x 'Mrs. A. Belmont)
'Professor R.B. Clark' ('Rochester' x 'Edw. J. Gardner' x 'Rochester')
'Radiance' ('Rochester' x '*Elsie Lenore*')
'Rhapsody' ('Rochester' x 'Mrs. A. Belmont')
'Sacrament' ('Rochester' x 'Primrose')
'Satin Cloud' ('Rochester' x '*Elsie Lenore*')
'Sculptured Ivory' ('Rochester' x 'Primrose')
'Seafoam' ('Rochester' x octoploid seedling)
'Sea Storm' ('Flora' x 'Mrs. A. Belmont')
'Shimmering Sea' ('*Elsie Lenore*' x 'Rochester')
'Sonnet' ('Mrs. A. Belmont' x 'Flora')
'Snow Cap' ('Rochester' x '*Professor R.B. Clark*')
'Snowdrift' ('Rochester' selfed)
'Snow Princess' ('Rochester' x 'Mother Louise')
'St. Jerzy Popieluszko' ('Prodige' x 'Rochester')
'Swansdown' ('Rochester' x '*Atheline Wilbur*')
'Talisman' ('Sarah Sands' x 'Rochester')
'Thunderbolt' ('Prodige' x 'Rochester')
'Tiffany Blue' ('True Blue' x 'Mrs. A. Belmont')
'Wedgwood Blue' ('Rochester' x 'Mrs. A. Belmont')
'Wild Fire' ('*Elsie Lenore*' x 'Rochester')
'Windsong' ('Rochester' x '*Elsie Lenore*')
'Winners Circle' ('Rochester' x 'Mrs. A. Belmont')
'Yankee Doodle' ('Prodige' x 'Rochester')

Little Leaf Lilacs
- 'Epaulettes' (*S. Julianae x Julianae* 'George Eastman')
- 'Pink Parasol' (*S. Julianae* 'Hers' x *Julianae* 'George Eastman')
- 'Sentinel' (*S. Julianae* 'Hers' x *Julianae* 'George Eastman')

Late Lilac Hybrids
- 'Evensong' ('Garden Peace' x 'Lark Song')
- 'Spellbinder' (*S. komarowii x S. wolfii*)
- 'Garden Peace'
- 'Lark Song' (*swegitella x komarowii*)
- 'Springtime' type
- 'Sunrise'
- 'Dancing Druid' (*tomentella x yunnenensis*)
- 'Kum Bum' (*tomentella* tetraploid)
- 'Prophecy' (*yunnanensis* tetraploid)

Tree Lilac
- *S. reticulata* 'Chinese Magic'

Among the lilacs, Highland Park

Royal Botanical Gardens - Hamilton, Canada

The Royal Botanical Gardens, Hamilton, at the 19th International Horticultural Congress in Warsaw, Poland, September, 1974, was appointed to assume the duties of the International Registration Authority for cultivar name of lilacs, as of January 1, 1975. Primary reasons leading to this appointment were the quality and size of our lilac collection and the special interest in lilacs among certain members of the Gardens' staff.

The Katie Osborne Lilac Garden

About 1 km east from the **Katie Osborne Lilac Collection**, where Old Guelph Road underpasses Highway 403, was the location of the Royal Botanical Gardens' first lilac collection. In the fall of 1960 and spring of 1961, the collection (approximately 100 different lilacs) was moved to its present location in the Arboretum, which was cleared from existing woods. Apart from occasional levelling for the grass path, the existing ground contours are those of the original natural landscape. In 1965, the collection caught the interest of a Gardens' friend whose subsequent generosity resulted in a greatly expanded garden. In the **Katie Osborne Lilac Collection**, at present, are displayed 693 different kinds of lilacs, which makes it the largest such collection in the world. It stands in memory of one who was fond of lilacs and had a special interest in the Royal Botanical Gardens.

Different exposures within the 'Lilac Dell' are used to grow specific groups of lilacs such as: single or double French hybrids, *Prestoniae* hybrids, early flowering hybrids, species, etc. Though the lilacs are sun-loving plants, occasional trees from the original forest were left as an aesthetic contribution to the rolling grounds thus creating a pleasant environment throughout the year. Note that you are only 5 km from downtown Hamilton, yet free from city noise.

The Lilac Species and Cultivars

There are over 1,600 named lilac species and cultivars, not all of them readily available commercially. Only 26 of these are species, all of them native to Eastern Asia, Himalayas, Afghanistan and Southern Europe. The remainder are man-made selections or cultivars derived from open or controlled cross-pollination or spontaneous or induced mutants. Greatest individual contributions to selected lilac cultivars were made by three generations of the Lemoine family from Nancy, France; hence the largest group of lilac cultivars are called French Hybrids, to which other hybridizers contributed and continue to add new cultivars.

In 1800, only two lilac cultivars were known. This escalated rapidly to 300 by 1900, 830 by 1960 and over 1,600 today. A very limited number of good quality lilac cultivars are available from commercial nurseries, hence joining the International Lilac Society gives one inexpensive access to desired lilac plants through exchange.

Most lilacs are shrubs with the exception of *Syringa reticulata* var. *reticulata* (Japanese Tree Lilac) and *Syringa pekinensis* (Peking Lilac) which are trees up to 60 feet tall.

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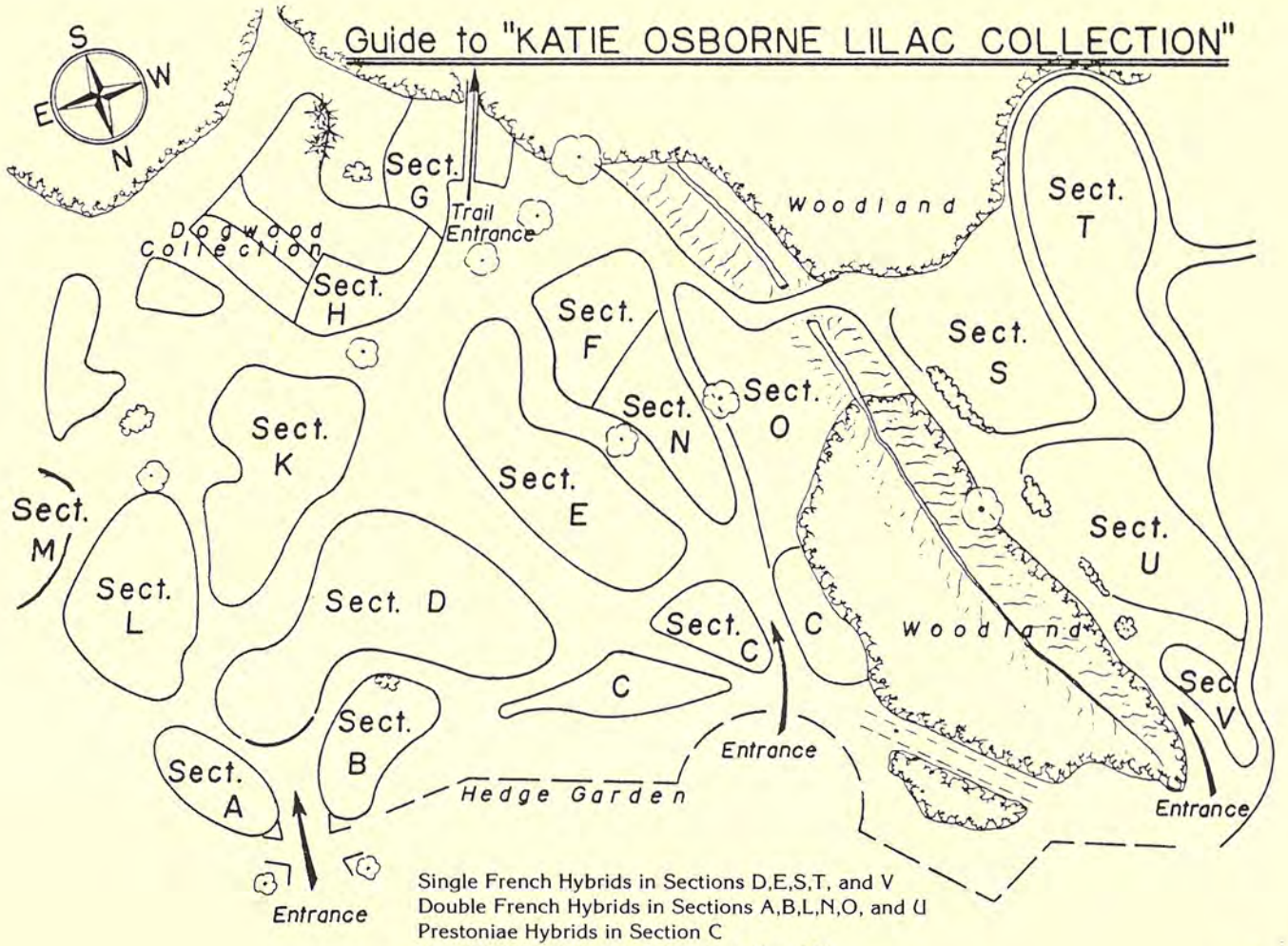
* Adapted from Royal Botanical Gardens Horticultural Leaflet No. 4 (1986).

Guide to "KATIE OSBORNE LILAC COLLECTION"



Single French Hybrids in Sections D,E,S,T, and V
Double French Hybrids in Sections A,B,L,N,O, and U
Prestoniae Hybrids in Section C
Hyacinthiflora Hybrids in Sections F and K
Species and misc. Hyb. in Sections G,H and K

C.H.

List of Lilacs in the Katie Osborne Lilac Collection

SYRINGA VULGARIS CULTIVARS

(Single and Double French Hybrids)

NAME	SECTION
CV. (No. 71-Dr. Lemke)	U
cv. (Sport of 'Sensation')	S
'A.B. Lamberton'	O
'Abel Carriere'	U
'Adelaide Dunbar'	O
'Admiral Farragut'	S
'Agincourt Beauty'	D
'Alba Grandiflora'	S
'Alba Virginalis'	S
'Aleksei Mares'Ev'	V
'Alexander Hamilton'	L
'Aline Mocqueris'	E
'Allison Gray'	D
'Alphonse Bouvier'	L
'Alphonse Lavallee'	L
'A.M. Brand'	D
'Ambassadeur'	D
'Amethyst'	D
'Ami Schott'	A
'Amor'	D
'Andenken an Ludwig Spaeth'	D
'Andre Csizik'	E
'Angel White'	D
'Anna Nickles'	D
'Anne Shiach'	E
'Anne Tighe'	N
'Archeveque'	U
'Arthur William Paul'	N
'Astra'	M
'Banquise'	L
'Belle De Nancy'	L
'Bertha Child'	E
'Bertha Phair'	L
'Beth Turner'	E
'Biala Anna'	D&T
'Bicolor'	S
'Big Blue'	M
'Bleuatre'	D
'Blue Delight'	T
'Bogdan Khmel 'Nitskii'	U
'Bogdan Przyrzykowski'	O
'Boule Azuree'	D
'Boussingault'	U
'Bright Centennial'	D
'Burgemeester Loggers'	S
'Burgemeester Voller'	E
'C.B. Van Nes'	D
'Calvin C. Laney'	T
'Captaine Baltet'	E
'Capitaine Perrault'	O
'Carley'	T
'Carmine'	S
'Caroline Foley'	S
'Cases Frilled Pink'	L
'Cavour'	M
'Champlain'	N
'Charles Baltet'	O
'Charles Joly'	A
'Charles Sargent'	N
'Charles X'	E
'Charlotte Morgan'	U
'Christophe Colomb'	D
'Chris'	D
'City of Gresham'	E
'City of Kalama'	E
'City of Longview'	U
'City of Olympia'	D
'Clara Cochet'	T
'Clara'	S
'Clarence D. Van Zandt'	D
'Coerulea Superba'	S
'Colbert'	B
'Colmariensis'	D
'Col. Wm. R. Plum'	E
'Comte Adrien De Montebello'	L
'Comte De Kerchove'	N
'Comte Horace De Choiseul'	N
'Condorcet'	L
'Congo'	D
'Conquete'	V
'Cora Brandt'	C
'Cora Lyden'	O
'Corinne'	T
'Crampel'	S
'Crepuscule'	S
'Croix De Brahy'	D
'Cynthia'	M
'Danton'	E
'Dappled Dawn'	S
'Dawn'	S
'De Humboldt'	U
'De Jussieu'	U
'De Miribel'	D
'De Saussure'	N
'Decaisne'	D
'Descanso Giant'	M
'Descanso King'	M
'Desfontaines'	L

NAME	SECTION
'Deuil D'Emile Galle'	U
'Diannah Abbott'	M
'Diderot'	E
'Dillia'	N
'Diplomate'	E
'Directeur Dorenbos'	E
'Doctor Brethour'	E
'Downfield'	U
'Doyen Keteleer'	U
'Dr. Lindley'	S
'Dr. Maillot'	U
'Dr. Masters'	L
'Dr. Nobbe'	V
'Dr. Von Regel'	D
'Duc De Massa'	B
'Dusk'	D
'Dwight D. Eisenhower'	D
'Earliest Double White'	L
'Edith Cavell'	L
'Edmond About'	U
'Edmond Boissier'	S
'Edna Dunham'	D
'Edouard Andre'	O
'Edward J. Gardner'	O
'Ekenholm'	E
'Eleanor Berdeen'	M
'Ellie-Marie'	D
'Emil Liebig'	L
'Emile Gentil'	A
'Emile Lemoine'	L
'Erzherzog Johann'	T
'Ethel Child'	T
'Ethiopia'	S
'Etna'	D
'Etoile De Mai'	B
'Excellent'	S
'Fale Baltyku'	D
'Firmament'	D
'Flora'	E&V
'Fraicheur'	T
'Frank Klager'	S
'Frank Paterson'	E
'Frau Wilhelm Pfitzer'	T
'Fred L. Klager'	M
'Fred Payne'	D
'Fritz'	U
'Fuerst Liechtenstein'	S
'Galina Ulanova'	D
'Gastello'	V
'Gaudichaud'	O
'Geant des Batailles'	E
'Geheimrat Heyder'	V
'General Elwell S. Otis'	U
'General Grant'	T
'General John Pershing'	N
'General Kitchener'	N
'General Pershing'	N
'General Sheridan'	O
'General Sherman'	E
'George W. Aldridge'	T
'George Bellair'	L
'Gerrie Schoonenberg'	S
'Gilbert'	D
'Gismonda'	O
'G.J. Bardsee'	M
'Gloire De La Rochelle'	T
'Gloire De Lorraine'	E
'Gloire De Moulins'	S
'Gloire D'Aalsmeer'	D
'Glory'	E
'Godron'	L
'Goliath'	T
'Gortenziya'	E
'Grace Orthwaite'	E
'Grand Duc Constantin'	B
'Hallelujah'	M
'Heather'	E
'Heavenly Blue'	M
'Helen Schloen'	E
'Helene Agathe Keesen'	E
'Henri Martin'	L
'Henri Robert'	B
'Henry Clay'	T
'Henry Wadsworth Longfellow'	O
'Henry Ward Beecher'	N
'Herman Eilers'	T
'Hippolyte Maringer'	B
'Hiram H. Edgerton'	T
'Hosanna'	L&U
'Hugo De Vries'	D
'Hugo Koster'	D
'Hugo Mayer'	E
'Humphrey'	M
'Interlude'	N
'I.V. Michurin'	U
'Jacques Callot'	E
'James Berdeen'	E
'James Booth'	D
'James Stuart'	S
'Jane Day'	M
'Jan Van Tol'	E
'Jean Bart'	O
'Jeanne D'Arc'	A
'Jessie Gardner'	T
'Joan Dunbar'	U
'Johann Mensing'	T
'Jonkheer G.P. Van Tets'	E
'Jules Ferry'	A

NAME	SECTION
'Jules Simon'	L
'Julien Gerardin'	O
'K.A. Timiryazev'	S
'Kapitan Teliga'	T
'Kate Harlin'	D
'Katherine Havemeyer'	L
'Kingsville'	D
'Koenigin Luise'	T
'Komsomolka'	U
'Kosmos'	S
'Krasavitsa Moskvy'	L
'Kremlevskie Kuranty'	T
'L'Oncle Tom'	D
'La Mauve'	L
'La Tour D'Auvergne'	U
'Lady Lindsay'	T
'Lake Bled'	D
'Languis'	S
'Laplace'	E
'Laura L. Barnes'	L
'Lavaliensis'	D
'Le Notre'	O
'Le Printemps'	U
'Lemoinei'	L
'Leon Gambetta'	L
'Leon Simon'	O
'Leone Gardner'	E
'Leonid Leonov'	E
'Leonie Lambert'	E
'Lewis Maddock'	T
'Lilarosa'	S
'Lillian Lee'	D
'Linne'	N
'Long Fellow'	D
'Louis Henry'	O
'Lucelle'	S
'Lucie Baltet'	D&S
'Macrostachya'	E
'Madame Kreuter'	M
'Madeleine Lemaire'	N
'Magellan'	A
'Marc Micheli'	B
'Marceau'	D
'Marechal De Bassompierre'	U
'Marechal Foch'	E
'Marechal Lannes'	A
'Marengo'	D
'Margaret Rice Gould'	S
'Margot Grunewald'	N
'Marie Finon'	D
'Marie Legraye'	E
'Marie Marcelin'	L
'Marlyensis Pallida'	S
'Marshal Vasilevskii'	L
'Marshal Zhukov'	T
'Martha Kounze'	U
'Martha'	D
'Mathieu De Dombasle'	O
'Maurice Barres'	E
'Maurice De Vilmorin'	U
'Mauve Mist'	V
'Maxime Colbert'	B
'Maximowicz'	A
'May Day'	S
'Mechta'	S
'Michel Buchner'	L
'Midwest Gem'	N
'Mildred Luetta'	L
'Miss Ellen Willmott'	B
'Mme. Abel Chatenay'	B
'Mme. Amelie Duprat'	N
'Mme. Antoine Buchner'	O
'Mme. Auguste Gouchault'	L
'Mme. Briot'	T
'Mme. Casimir Perier'	L
'Mme. Charles Souchet'	T
'Mme. De Miller'	U
'Mme. Felix'	S
'Mme. Florent Stepman'	E
'Mme. F. Morel'	D
'Mme. Henri Guillaud'	U
'Mme. Lemoine'	A
'Mme. Leon Simon'	U
'Mme. Moser'	D
'Monge'	D
'Mons J. De Messemaeker'	T
'Mons. Leon Mathieu'	S
'Mons. Lepage'	T
'Mons. Maxime Cornu'	L
'Mont Blanc'	D
'Montaigne'	L
'Montgolfier'	M
'Monument'	D
'Moonglow'	D
'Moonlight'	M
'Mrs. Calvin Coolidge'	T
'Mrs. Edward Harding'	L
'Mrs. Fannie W. Heath'	L
'Mrs. Harry Bickle'	D
'Mrs. John S. Williams'	E
'Mrs. McKelvey'	N
'Mrs. Trapman'	D
'Mrs. Watson Webb'	T
'Mrs. W.E. Marshall'	D
'My Favorite'	O
'Nadezhda'	U
'Nancy Frick'	S
'Naudin'	N

NAME	SECTION
'Negro'	E
'Nellie Maria'	D
'Night'	T
'Noisettiana Alba'	E
'Oakes Double White'	O
'Obelisque'	B
'Ogni Donbassa'	U
'Ogni Moskvy'	E
'Old Fashioned'	M
'Old Rose'	E
'Olive May Cummings'	B
'Olivier De Serres'	L
'Ostankino'	T
'Ostrander'	N
'Othello'	S
'Pamiat O S.M. Kirove'	A&U
'Paradise'	T
'Pasteur'	D
'Patrick Henry'	L
'Paul Deschanel'	O
'Paul Hariot'	B
'Paul Thirion'	A
'Peerless Pink'	S
'Perle Von Stuttgart'	U
'Perle Von Teltow'	M
'Philemon'	E
'Pierre Joigneaux'	O
'Pink Mist'	S
'Pinkie'	T
'Pioner'	S
'Planchon'	A
'Pol Robson'	T
'Pom Pom'	S
'President Carnot'	B
'President Fallieres'	L
'President Grevy'	L
'President Harding'	S
'President John Adams'	U
'President Lebrun'	D
'President Lincoln'	S
'President Loubet'	L
'President Massart'	S
'President Monroe'	N
'President Poincare'	B
'President Roosevelt'	E
'President Viger'	N
'Pride of Descanso'	D
'Primrose'	D
'Prince De Beauvau'	L
'Prince Imperial'	D
'Prince Notger'	T
'Prince Of Wales'	T
'Princess Alexandra'	S
'Princess Beatrix'	M

NAME	SECTION
'Princesse Camille de Rohan'	S
'Princesse Clementine'	N
'Prinzessin Klotilde'	D
'Priscilla'	T
'Prodige'	E
'Professor Sargent'	T
'Prof. Edmund Jankowski'	E
'Prof. E.H. Wilson'	L
'Prof. Hoser'	U
'Prof. Josef Brzezinsaki'	L
'Pyramidalis Alba'	S
'Pyramidal'	O
'Quadricolor'	T
'Reaumur'	D
'Redbud'	D
'Reine Elisabeth'	T
'Reine Marguerite'	L
'Rene Jarry-Desloges'	L
'Renoncule'	U
'Riet Bruidegom'	S
'Rochambeau'	T
'Rochester'	S
'Roi Albert'	S
'Romance'	V
'Ronsard'	D
'Rosace'	L
'Rouge De Trianon'	D
'Rubella Plena'	B
'Rubra Insignis'	D
'Ruhm Von Horstenstein'	E
'Rustica'	U
'S.V. Lavrov'	N
'Saint Joan'	A
'Saint Margaret'	A
'Sarah Sands'	T
'Schermerhornii'	T
'Scipion Cochet'	D
'Senateur Volland'	U
'Sensation'	S&U
'Sholokhov'	T
'Sibirica'	E
'Silver King'	E
'Slater's Elegance'	E
'Sobra'	U
'Sorok Let Komsomola'	E
'Souv. D' Alice Harding'	O
'Souv. De Claudius Graindorge'	E
'Souvenir De Gaspard Callot'	L
'Souvenir de L. Thibaut'	U
'Souv. De Mme. Edmond Kenis'	D
'Souv. De Mme. Louis Gielis'	V
'Souvenir De Simone'	O
'Sovietskaya Artika'	L
'Stadtgartner Rothpletz'	L

SYRINGA x HYACINTHIFLORA CULTIVARS

(D) = *S. Oblata Dilatata x S. Vulgaris*
(G) = *S. Oblata Giraldii x S. Vulgaris*

NAME	SECTION	NAME	SECTION
'Alice Eastwood' (G)	F	'Maureen' (G)	F
'Anabel' (D)	K	'Minnehaha' (D)	K
'Assessippi'(D)	K	'Mirabeau' (G)	F
'Berryer' (G)	K	'Montesquieu' (G)	F
'Blue Hyacinth' (G)	F	'Mount Baker' (D)	K
'Bountiful' (G)	F	'Necker' (G)	F
'Buffon' (G)	K	'Nokomis' (D)	K
'Campsie' (D)	F	'Norah' (G)	F
'Catinat' (G)	K	'Pascal' (G)	F
'Charles Nordine' (D)	K	'Patricia' (G)	F
'Churchill' (D)	K	'Peggy' (G)	F
'Clarke's Giant' (G)	F	'Pink Cloud' (G)	K
'Claude Bernard' (G)	F	'Pink Spray' (G)	F
'Daphne Pink' (D)	K	'Pocahontas' (D)	K
'Doctor Chadwick' (D)	K	'Purple Glory' (G)	K
'Esther Staley' (G)	F	'Purple Heart'	K
'Evangeline' (D)	K	'Rowancroft Pink' (G)	F
'Excel' (D)	K	'Royal Purple' (D)	K
'Fantasy' (G)	K	'Scotia' (G)	F
'Fellenberg'	F	'Sister Justena' (D)	K
'Fraser' (D)	K	'Splendor' (G)	K
'Gertrude Leslie' (D)	K	'Summer Skies' (G)	F
'Grace MacKenzie' (D)	K	'Sunset' (G)	K
'Grace' (G)	F	'Swarthmore' (D)	K
'Hyacinthiflora Plena'	K	'The Bride' (D)	K
'Jewel' (D)	G	'Tom Taylor' (D)	K
'Lamartine' (G)	F	'Turgot' (G)	F
'Laurentian' (D)	K	'Vauban' (G)	F
'Louvain' (D)	K	Villars' (G)	K
'Louvois' (G)	F	'Viscountess Willingdon'	M
'Maiden's Blush' (D)	K	'White Hyacinth' (G)	K

SYRINGA CULTIVARS OF OTHER INTERSPECIFIC HYBRIDS

NAME	SECTION
'Albida' (*S. sweginzowii x S. tomentella*)	K
'Dancing Druid' (*S. yunnanensis x S. tomentella x S. komarowii*)	G
'Germinal' (*S. x henryi x S. tomentella*)	H
'Hedin' (*S. villosa x S. sweginzowii*)	G
'Hunting Tower' (*S. villosa x S. sweginzowii*)	K
'Josee' ((*S. patula x S. microphylla*) *x S. meyeri*)	H
'Kim' (*S. josikaea x S. ?*)	H
'Minuet' (*S. x josiflexa* 'Redwine' *x S. x prestoniae* 'Donald Wyman')	O
'Miss Canada' (*S. x josiflexa* 'Redwine' *x S. x prestoniea* 'Hiawatha')	C
'Prairial' (*S. x henryi x S. tomentella*)	K
'Skinneri' (*S. pubescens x S. patula*)	K

NAME	SECTION
'Stanislaw Maniuszko'	M
'Stefan Makowiecki'	T
'Sumerki'	S
'Sunol'	O
'Susan B. Anthony'	T
'Sweet Charity'	D
'Sweetheart'	B
'Tankist'	M
'Taras Bulba'	U
'Thomas A. Edison'	T
'Thomas Jefferson'	D
'Thunberg'	B
'Tita'	U
'Todmorden'	D
'Tournefort'	U
'Toussaint-L'Ouverture'	D
'Triomphe De Moulins'	M
'Triste Barbaro'	D
'Turenne'	S
'Utro Moskvy'	N
'Valentina Grizodubova'	U&L
'Valetteana'	N
'Van Aerschott'	S
'Versaliensis'	S
'Verschaffeltii'	V
'Vesper'	M
'Vestale'	D
'Victor Lemoine'	B
'Ville De Troyes'	D
'Violet Glory'	D
'Violetta'	O
'Virginia Becker'	D
'Virginite'	O
'Vivian Evans'	D
'Viviand-Morel'	U
'Volcan'	T
'Voorzitter Dix'	V
'Waldeck-Rousseau'	L
'Weddle'	U
'White Surprise'	E
'White Swan'	S
'William C. Barry'	E
'William Robinson'	U
'William S. Riley'	E
'Woodland'	D
'Woodland Blue'	D
'Woodland Violet'	T
'W.T. Lee'	L
'Yubileinaya'	E
'Znamia Lenina'	E
'Zulu'	T

SYRINGA x PRESTONIAE CULTIVARS

NAME	SECTION
'Alice Rose Foster'	C
'Alice'	C
'Ariel'	C
'Basia'	C
'Beacon'	C
'Calpurnia'	C
'Charmian'	C
'Constance'	C
'Danusia'	C
'Dawn'	C
'Desdemona'	C
'Donald Wyman'	C
'Dorcas'	C
'Elinor'	C
'Ethel M. Webster'	C
'Ferna Alexander'	C
'Francisca'	C
'Freedom'	C
'Goplana'	C
'Handel'	C
'Hecla'	C
'Helen'	C
'Hiawatha'	C
'Isabella'	C
'Jaga'	C
'Jessica'	C
'Juliet'	C
'Lucetta'	C
'Maybelle Farnum'	C
'Miranda'	C
'Nerissa'	C
'Nike'	C
'Nocturne'	C
'Olivia'	C
'Ophelia'	C
'Paulina'	C
'Portia'	C
'Regan'	C
'Silvia'	C
'Telimena'	C
'Titania'	C
'Ursula'	C
'Valeria'	C

SPECIES AND MISCELLANEOUS HYBRIDS

NAME	SECTION
+ *correllata*	G
emodi 'Aurea'	H
'Variegata'	H
fauriei	G
josikaea	H
'Eximia'	G
'H. Zabel'	H
'Rosea'	H
julianae	G
komarowii	H
laciniata	N
x pinnatifolia	K
meyeri	G
'Palibin'	K
microphylla 'Superba'	K
oblata	G
var. *alba*	H
var. *dilatata*	G
var. *giraldii*	G
'Cheyenne'	G
'Melissa Oakes'	K
patula	G
cv. (pink form)	G
pekinensis	C
'Pendula'	K
potaninii	G
reflexa	K
'Pallens'	G
reticulata var. *reticulata*	G
'Ivory Silk'	G
sweginzowii	G
'Lark Song'	H
tigerstedtii	K
tomentella	G
'Rosea'	G
velutina 'Excellens'	G
villosa	G&K
'Aurea'	K
'Bretschneideri'	K
'Charles Hepburn'	K
'Rosea'	K
vulgaris	G
vulgaris var. *coerulea*	G
wolfii	G
cv. (pink form)	G
x reflexa 'Hagny'	G
x chinensis	K
f. bicolor	K
'Alba'	K
'Le Troyes'	K
'Metensis'	K
'Orchid Beauty'	H
'President Hayes'	K
'Saugeana'	H
x diversifolia 'Nouveau'	K
'William H. Judd'	K
x henryi 'Lutece'	K
'Summer White'	G
x josiflexa 'Anna Amhoff'	C
'Bellicent'	H
'Elaine'	H
'Enid'	H
'Guinevere'	G
'James Macfarlane'	H
'Jesse Hepler'	G
'Lynette'	H
'Nellie Bean'	C
x nanceiana 'Floreal'	K
'Rutilant'	G
x persica	K
x swegiflexa	G
var. *rosea*	K
'Alba'	K
'Prophecy'	H

There are 693 taxa (species, varieties, hybrids & cultivars) in the collection.

Grape Hill Gardens, May 6, 1986

Lilac Hybridization at the Royal Botanical Gardens

by Hugh Pearson, Plant Breeder

The first step in lilac hybridization is to collect pollen. Flower clusters are collected and brought indoors from those plants which have been chosen to be the male or pollen parent. Florets that are plump but unopened are removed from the cluster. These are at the proper stage for harvesting anthers. Usually, I pull apart the petals and use sharp pointed forceps to remove the anthers.

The anthers are placed to a depth of 1 cm in small labelled vials. These are placed on top of a refrigerator overnight to allow the anthers to dry. In the morning the anthers have released their pollen which looks like fine yellow dust. The vials are then capped and stored over calcium chloride in a dessicator in the refrigerator until needed for pollination.

Before a pollination can be done, the seed- or female-parent must be emasculated by removal of the anthers. Flower clusters with only a few open florets are chosen. The majority of buds on these inflorescences are plump and unopened. The first step is to remove the opened flowers, since bees or other insects may already have pollinated these flowers. The emasculation of the remaining unopened florets is easy with a bit of practise. The entire cluster is steadied in one hand. The other hand uses the forceps to grip each floral tube just below the slight swelling where the anthers are. Then with a slight twisting motion, a gentle pull removes the petals and anthers. The stigma and style are now visible. Once the buds near the tip become too small to emasculate I cut them off.

After the entire cluster is emasculated, pollination can be done. A camel's hair brush is used to transfer pollen from the vial onto each stigma. A tag recording the two parents and the date is affixed to the base of the inflorescence; after which, the entire inflorescence is bagged. Bagging ensures that no foreign pollen, either wind blown or insect transmitted, can contaminate your cross. I also like to return two days later to redo the pollination in order to maximize the chance of fertilization.

It is important to clean the camel's hair brush in alcohol whenever you change pollen parents to prevent contamination. The bag can be removed from an inflorescence several weeks later when the stigmas are dry and brown, and the seed pods are beginning to swell.

Seed is harvested in September when the pods start to turn brown. Failure to do so could result in the loss of seeds if the pods completely split open. I cut off the entire fruiting cluster and place it in a paper bag. Indoors, the seeds are extracted and placed in small labelled envelopes. The seed will germinate readily upon sowing, but I have found that plants grown from stratified seed

seem to be more vigorous. Seeds are stratified in bags of a moistened 1:1 peat/sand mixture stored at 5°C for several months.

The stratified seed is sown in small flats and lightly covered with sifted media (at RBG we use soilless mixtures). When the second true leaf begins to emerge the seedlings are pricked off and potted into 5 x 5 cm peat pots. They are then transplanted into cold frames in our lath house for their first one or two years. After that they are moved to the liner beds where they are grown at an improved spacing for one year. Next, they are planted in an evaluation block in the nursery where they are grown at a nursery row spacing. At this location they are evaluated for traits such as flower colour, plant habit and size, floriferousness, and disease resistance. This sort of evaluation takes place over several years.

Dr. James S. Pringle was the first to conduct lilac hybridization at RBG when he began his studies on the crossability and inheritance in the series *Villosae*. These studies of the series *Villosae* were published in *LILACS 7:50-70* as RBG contribution No. 30, 1978. Another aspect of this work was the subsequent investigation of the actual ancestory of the alleged interseries and intersubgeneric hybrids. Another result of Dr. Pringle's lilac work was the publication of a summary of the currently accepted nomenclature for species and botanical hybrids for horticulture in 1983.

RBG's first plant breeder, Mrs. Joan Brown, began lilac breeding for improved ornamental cultivars in 1974. She began breeding in three areas. They were with *hyacinthiflora* hybrids, *vulgaris* hybrids and *Pubescentes* series species and cultivars.

In the first of these groups cultivars, like 'Maiden's Blush' and 'Esther Staley', were hybridized in an effort to find an improved pink colour. This aspect of the work has been curtailed due to time conflicts during the bloom period and space constraints in the growing areas.

In the second group cultivars, like 'Primrose' and 'Rochester', were hybridized for an improved yellow colour and 'Decaisne' and 'Crepescule' were hybridized for blue. This research is currently being continued by RBG's second plant breeder, Hugh Pearson. Back-cross breeding using 'Primrose' as the recurrent parent is being carried on in the second generation in an attempt to find some progeny expressing a yellow colour. Offspring in the first generation were white, although some yellow-tinged buds were seen. Another method to improve the yellow pigment attempts to fix that colour with an intensifying factor that the vivid purples may have. Sib-crossing the best blue progeny and intercrossing them with vivid dark purples may improve the blue colour as well.

In the last group, interspecific hybridization is being used to develop more variation in corolla colour in these plants that naturally have a more compact habit. Some autumn foliage colour has also been noted in this group. *S. meyeri* 'Palibin' and *S.*

microphylla 'Superba' have been used as parents in this group.

In all the lilac hybridization at RBG, close attention is paid to floriferousness, plant habit and size, and disease resistance. In time, improved RBG-bred lilacs will be available to all lilac aficionados. Conversations with delegates to the ILS convention after the formal presentations proved very encouraging and enlightening. In particular, two large-flowered, white *vulgaris* hybrids previously viewed by one delegate were thought to be improvements upon the existing whites. With this in mind, close attention will be paid to these plants during their evaluation in the spring of 1987.

Lilac Propagation at the Royal Botanical Gardens

by Chris Graham, Superintendent of Horticulture

The propagation of lilacs has been a major part of the Royal Botanical Gardens' plant production programme for over twenty years. During this time, we have experimented with several different plant propagation techniques to achieve our goal of producing high quality plants on their own roots.

To us, the production of self-rooted plants is of the utmost importance as it permits us the better to assure trueness to name and also avoid potential graft incompatabilities.

Currently, lilacs are propagated by three methods: softwood cuttings, grafting and seeding.

1. PROPAGATION BY SOFTWOOD CUTTINGS

The Rooting Environment:

Softwood cutting propagation is done in an unheated Quonset-style fibreglass-covered greenhouse measuring approximately 10 x 30 feet. An exhaust fan at one end operates during the summer months and the house is covered with a 50% shade, woven polyethylene cloth. A 32" centre isle is bordered by 2 benches, ches, each 30 feet long by 42 inches wide by 36 inches and backfilled with sharp sand. Into the sand are buried thermostatically controlled electric heating cables calibrated to provide constant bottom heat of approximately 70°F. Humidity and irrigation are provided by an intermittent mist system. The mist nozzles used are "Pate B 10" which are brass, have a 1 mm orifice and a discharge of 0.9 litres per minute at 25 psi. The nozzles are spaced at 36 inch centres on a 1/2 inch copper line suspended approximately 18 inches above the crop. Water to the line is controlled by an electric solenoid valve. Preceeding the solenoid valve in the water line is a 1/2 inch line strainer to remove debris which would clog the nozzles. The solenoid valve is activated by 2 time clocks wired in sequence. The first clock runs a standard 24 hour cycle. During its "on" period, it activates a 30 minute time clock with 30 second calibrations. The

"on" periods for both of these clocks are manually altered based on prevailing weather conditions. Typically, on a sunny July day 30 seconds of mist would be applied every 15 minutes between 8 am and 7 pm.

The water used is city tap water with a pH of about 7.4.

Containers and Medium:

For convenience and portability, all cuttings are rooted in wooden boxes measuring 22" x 10" x 3.5" (inside dimensions). The rooting medium for lilacs is a homogenous mixture of 3 parts sharp sand to 1 part sphagnum peatmoss. The medium is moistened prior to sticking the cuttings. The pH of the medium is not monitored on a regular basis but is decidedly alkaline.

Harvesting the Cuttings:

Maturity of the wood is a key factor in softwood cutting propagation. If taken too early, cuttings are soft and very perishable; if taken too late, they become woody and difficult to root. In Hamilton, harvesting of cuttings is generally done during the first two weeks of June. At this stage, flowering has finished and the greenwood of the vegetative cuttings is beginning to show signs of dappled brown.

Ideally, cuttings are collected early in the morning. In most cases the portion of the plant from which cuttings are collected seems insignificant but rank or sucker-like growth is avoided. Cuttings selected are 4 to 7 inches long and generally have 4 to 6 pairs of leaves. Immediately after being severed from the plant, the cuttings are quickly dipped in water and stored in plastic bags in the shade. Only as many cuttings as can be stuck that day are harvested. When selecting stock plants for harvest, preference is given to vigorously growing, disease and insect free plants.

Cutting Preparation and Rooting:

All cutting preparation is done in a shaded area. Cuttings are prepared individually. A fresh basal cut is made with a knife just below a node. The lower one or two pairs of leaves are removed leaving at least two and ideally three pairs of leaves on the cutting. The growing tip is not pinched out. The leaf area of individual leaves is reduced by about one half. While not essential, this practice permits a greater density in the rooting box. A 1/2 inch wound is made on one side of the cutting above the basal node. The basal portion of the cutting is then dusted with 9 parts 0.8% IBA in talc to 1 part Captan 50 WP. The cuttings are then inserted into the prefilled boxes of rooting medium on 1 1/2 inch to 2 inch centres. Overcrowding of the cuttings is avoided. Filled boxes are then moved to the greenhouse and put under intermittent mist. The boxes of cuttings are monitored daily and any fallen leaves removed. Should a cutting lose all foilage, it is removced from the

boxes as leafless cuttings do not root. Rooting occurs over the next 7 to 10 weeks depending on the cultivar or species.

After Rooting Care:

Once rooted, the boxes of cuttings are moved from the propagating house to shaded cold frames. Normally, they are given one fertilization with a high phosphorus water soluble fertilizer.

The cuttings are overwintered in the rooting boxes in protected cold frames or in cold storage. They are planted out in liner beds the following spring as soon as the ground is workable.

Rooting percentages vary greatly among lilac taxa. In selecting plants for softwood cutting propagation, it is therefore important not only to select plants with desirable flower and form but also those with high rooting potential.

2. PROPAGATION BY GRAFTING

Grafting is not a method we normally use to propagate lilacs from our own collection. However, because dormant scions ship better than softwood cuttings, it is a method we are obliged to use when obtaining new taxa from other, often distant, collections.

When requesting scions, we ask that they be shipped to us in February.

The scions should be 1/4 inch in diameter, 4 - 6 inches long, of vegetative rather than flowering wood and freshly cut. They should be shipped dry and wrapped tightly in polyethelene. Scions are not always received in prime condition. Improper cutting, packaging or transit delays often take their toll and it is not unusual for scions to have broken bud during shipping.

The grafting techniques employed are designed to produce plants on their own roots by the end of the first growing season, hence the understock used serves only as a temporary nurse root.

Over the years many understocks including *Ligustrum sp., Syringa vulgaris, Syringa villosa* and *Fraxinus pensylvanica* have been experimented with. Privet and Lilac understocks are no longer used because of their persistent suckering natures.

Green ash, *Fraxinus pensylvanica,* has proven to be the best lilac understock for our production system. It is non-persistent, does not sucker excessively, can easily be grown to stock size in 1 or 2 years from seed, is readily available and has a long central root from which several grafts can usually be made.

Seed-grown ash understock of appropriate size is dug bare root late in the fall and stored at 40°F awaiting arrival of scions.

Grafting commences as soon as possible after the scions arrive. If grafting must be delayed, the scions are stored in polyethelene bags at 40°F. Grafting is most successful when both scion and stock are dormant.

Scion and stock are joined using a simple whip (no tongue) graft.

After washing, the ash stock is cut as close to the root as possible. Should the stock have a particularly long root, it is cut into 4 inch sections each of which make an acceptable stock. Corresponding cuts are made on the scions with an additional small portion of wood, from which roots will arise, being removed from the back side. The cambiums are aligned and the graft is bound tightly with a grafting elastic and waxed.

The grafts are then potted, several to a pot, in one- or two-gallon nursery containers. The potting medium is a moistened mixture of 50% peatmoss and 50% perlite by volume. The grafts are potted with the union buried as deeply as possible. The potted grafts are moved to a cold (50°F) greenhouse where they remain until spring planting. If the grafts produce adequate new growth in the pots, an early crop of softwood cuttings is harvested.

In the spring, the potted grafts (with considerable new growth) are hardened off in cold frames, then planted in liner beds. The grafting elastic is not severed at planting time and the grafts are planted deeply so that only 1 or 2 pairs of buds are above the surface of the soil. This puts the graft union approximately 3-5 inches deep. By the end of the first growing season most scions have grown roots of their own above the graft and the ash understock is declining.

3. SEEDING

Propagation of lilacs from seed is used to produce hybrid progeny resulting from breeding programmes and true species from native stands of known provenance. Once collected and cleaned all seed is stratified in a small volume of moist sand for 60 to 90 days at 40°F. All seed is sown under greenhouse conditions in small, well drained containers. The growing medium is a soilless, peat-lite mix.

After germination, which is extremely variable, the seedlings are allowed to grow until they have developed 2 pairs of true leaves. At this stage they are transplanted to individual 2 1/4 inch peat pots containing a similar peat-lite medium and are put on a regular feeding programme using water-soluble fertilizers designed for soilless growing mediums. In the spring, the seedlings are hardened off in shaded cold frames and then planted in open liner beds.

For the propagator lilacs are an interesting and challenging group of plants with which to work. Individual clones exhibit extreme variability in propagation potential. This is very apparent when one examines the ability of various clones of *Syringa vulgaris* to root from softwood cuttings, where under identical conditions some root with high percentages while others are miserable failures. These sorts of problems emphasize the need for accurate record keeping and analysis so that the propagator may develop a comprehensive and successful programme of lilac production.

THE UNIVERSITY OF GUELPH ARBORETUM LILAC COLLECTION

As fragrant, spring-flowering shrubs, lilacs have had a long popularity in Europe and North America. They were among the first ornamental shrubs brought to Ontario from Europe by the early settlers. Old homesteads can often be located by the persistent lilacs that once adorned their long-past dooryards.

All of the more than two dozen species of lilacs are native to Eurasia. Lilacs are classified under the genus *Syringa* in the Olive family, having family ties with the privets, forsythias and ashes. Lilac flowers are borne in large, paniculate clusters, each composed of numerous four-lobed, tubular flowers. Flower colors range from white to purple, with some cultivars approaching blue, red and even a pale yellow.

Lilac Diversity

The genus *Syringa* contains far more diversity than one sees in the many forms of the common lilac (*S. vulgaris*). This collection aims to display representatives of that diversity within the different hybrid groups and species, without containing more than a small percent of the more than one thousand cultivars that exist.

Lilacs range in size from low spreading shrubs with small leaves (*S. x persica, S. microphylla, S. meyeri*) to the large tree lilacs (*S. pekinensis, S. reticulata*). The Cut-Leaf Lilac (*S. laciniata*) has an appearance that is much softer than one associates with typical coarse-leaved lilacs. If autumn color is a priority in your landscape, consider *S. oblata* or *S. patula* 'Miss Kim', as representatives of this trait. The nodding lilac (*S. reflexa*) offers yet another variation from the typical, with pendulous flower clusters.

Flowering Times

Flowering begins in mid-May with *S. oblata* and the *Hyacinthiflora* hybrids, followed by the many French selections of *S. vulgaris*. The late lilac (*S. villosa*) and the Preston hybrids extends the season into a time that is less subject to late spring frosts. The original Preston lilacs were developed at Ottawa and are especially suitable for our climate. The lilac season is terminated with great flourish, when the Japanese tree lilac (*S. reticulata*) surprises the unsuspecting gardener with its massive, creamy-white flower clusters in late June.

Lilacs make few demands of the home gardener, considering the floral, fragrant and screening qualities they offer. Through different pruning practices, the form can be maintained either as a low shrub with vigorous growth or as a tall, tree-like shrub with picturesque trunks. There are only a few diseases the lilac grower should recognize. During wet, mild, springs a bacterial blight is sometimes seen, causing new growth and flowers to wilt and blacken, resembling late frost damage. Two insect pests occasionally can be damaging, if not controlled: lilac borer and scale. Early treatment can prevent serious damage.

Cultivar Groups

S. x hyacinthiflora: these hybrids flower early, before the leaves expand, with very fragrant, large open trusses.

S. vulgaris: the numerous French selections were derived from this species. Flower color ranges from white ('Miss Ellen Willmott', 'Rochester') to various pale shades, including yellow ('Primrose'), to deep purples ('Charles Joly', 'Congo', 'Andenken An Ludwig Spaeth'). Bicolored flowers are seen in the striking 'Sensation' as well as the subtle 'Mme. Antoine Buchner'.

S. x prestoniae: a late-flowering, hybrid series originated by Dr. Isabella Preston at Ottawa in 1920. The *S. x josiflexa* and *S. x nanceiana* hybrids are similar to the Preston lilacs.

University of Guelph Arboretum Lilac Collection

Syringa x chinensis 'Saugeana'
S. x chinensis 'Transon'
S. emodi
S. x henryi
S. x hyacinthiflora 'Assessippi'
S. x hyacinthiflora 'Daphne Pink'
S. x hyacinthiflora 'Esther Staley'
S. x hyacinthiflora 'Gertrude Leslie'
S. x hyacinthiflora 'Swarthmore'
S. x josiflexa 'James Macfarlane'
S. x josiflexa 'Royalty'
S. x josiflexa 'Rubra'
S. josikaea
S. josikaea 'Pallida'
S. komarowii
S. meyeri 'Palibin'
S. x nanceiana 'Floreal'
S. oblata 'Cheyenne'
S. oblata var. *dilatata*
S. oblata var. *giraldii*
S. patula
S. patula 'Miss Kim'
S. pekinensis
S. x persica
S. x prestoniae 'Coral'
S. x prestoniae 'Dawn'
S. prestoniae 'Desdemona'
S. x prestoniae 'Donald Wyman'
S. x prestoniae 'Helen'
S. x prestoniae 'Hiawatha'
S. x prestoniae 'Isabella'
S. x prestoniae 'Jessica'
S. x prestoniae 'Nocturne'
S. x prestoniae 'Miss Canada'
S. reflexa
S. reticulata var. *mandshurica*
S. reticulata var. *reticulata*
S. rhodopea
S. x swegiflexa
S. sweginzowii
S. tigerstedtii
S. tomemtella
S. villosa
S. vulgaris 'Alba Grandiflora'
S. vulgaris 'Alphonse Lavallee'
S. vulgaris Ami Schott'
Syringa vulgaris 'Andenken an Ludwig Spaeth'
S. vulgaris 'Andre Csizik'
S. vulgaris 'Belle de Nancy'
S. vulgaris 'Charles Joly'
S. vulgaris 'Firmament'
S. vulgaris 'Frank Paterson'
S. vulgaris 'Linne'
S. vulgaris 'Miss Ellen Willmott'
Syringa vulgaris 'Mme. Antoine Buchner'
S. vulgaris 'Mme. Casimir Perier'

Syringa vulgaris 'Mme. Florent Stepman'
S. vulgaris 'Monge'
S. vulgaris 'Paul Thirion'
S. vulgaris 'Peerless Pink'
S. vulgaris 'Primrose'
S. vulgaris 'William Robinson'
S. vulgaris 'Woodland Blue'
S. wolfii
S. wolfii var. *hirsuta*
S. yunnanensis
S. yunnanensis 'Rosea'

Lilacs in Nursery (1986)

Syringa AH 751 ex RBG Hamilton
S. AP 751 ex RBG Hamilton
S. AP 752 ex RBG Hamilton
S. ES 751 ex RBG Hamilton
S. HR 743 ex RBG Hamilton
S. VH 751 ex RBG Hamilton
S. VH 752 ex RBG Hamilton
S. VH 759 ex RBG Hamilton
S. WE 741 ex RBG Hamilton
S. x henryi 'Lutece' F_2 ex Arnold Arboretum
S. vulgaris 'Prodige' ex Sheridan Nurseries
S. x diversifolia 'Nouveau' ex RBG Hamilton
S. meyeri ex RBG Hamilton
S. meyeri 'Palibin' ex Morden Arboretum
S. microphylla 'Superba' ex RBG Hamilton
S. oblata ex Shenyang Arboretum, China
S. oblata var. *dilatata*, Kaema Plateau, North Korea
S. patula var. *kamibayashii*, Mt. Sorag, South Korea
S. pekinensis ex Peking Botanical Garden, China
S. x persica ex Peking Botanical Garden, China
S. x prestoniae 'Audrey' ex Morden Arboretum
S. reticulata var. *mandshurica*, Dai Ling, China
S. reticulata var. *mandshurica*, Shenyang Arboretum, China
S. reticulata var. *reticulata*, Dogo, Mt. Diamon, Japan
S. sweginzowii 'Albida' ex Arnold Arboretum
S. vulgaris 'Katherine Havemeyer' ex Woodland Nurseries
S. vulgaris 'Krasavitsa Moskvy' ex RBG Hamilton
S. vulgaris 'Mrs. Harry Hickle' ex RBG Hamilton
S. vulgaris 'Nadezhda' ex RBG Hamilton
S. vulgaris 'Sensation' ex RBG Hamilton
S. wolfii ex Latvian Academy of Sciences, USSR

Program Speakers : Graham, Pearson, Hildebrandt, Hibben, and Cole.

LILAC PROPAGATION BY TISSUE CULTURE; ACADEMIC TO COMMERCIAL

by Virginia Hildebrandt, St. Catherines, Ontario

ABSTRACT

Explants of actively growing shoot tips from greenhouse-grown plants of 'Souvenir de Simone', 'Krasavitsa Moskvy', 'Lillian Lee', 'Caroline Foley', 'Gen. John Pershing', 'Agincourt Beauty' and 'Vesper' (*Syringa vulgaris L.*) initiated new shoots on a modified Murashige and Skoog (MS) revised medium plus 0.1 mg/liter 6-benzyl-amino purine (BA) and either 0.125, 0.25 or 0.5 mg/liter indolacetic acid (IAA). More shoots were produced in older cultures with optimum multiplication obtained from shoots transferred to the same medium but with 7.5 mg/liter BA and 0.1 mg/liter IAA. About 6-7 shoots were produced per explant for all cv except 'Caroline Foley', which would produce 3/explant. Although excised shoots would root *in vitro*, rooting was more successful after a dip in 0.1% indolebutyric acid (IBA) and placement in vermiculite in a plastic-covered flat. Parameters to be considered during lilac propagation and to decrease costs during commercial application were discussed.

INTRODUCTION

Lilac (*Syringa vulgaris L.*) may be propagated by softwood cuttings taken 10-14 days after flowering or grafted onto seedling lilac, *Ligustrum* or *Fraxinus* rootstocks. Another, more recent method to propagate lilacs is by *in vitro* or tissue culture (Hildebrandt and Harney, 1983). The advantages of propagation by tissue culture are numerous and include the large number of plants available by this method, faster introduction of new cultivars, reproducibility or clonal uniformity, independence of season, circumvention of some problems, such as rooting and the potential to obtain pathogen-free clones. Pathogen-free clones, grown *in vitro*, have potential for international supply. In a commercial operation, economics of scale demand a method that is fast, accurate and provides a large number of copies. All this can be attained with tissue culture.

In tissue culture it is important to establish axenic culture, free of bacteria, fungi and external organisms by disinfestation and artificially provide nutrients for the cells or tissue that are growing heterotrophically. Both inorganic and organic components as well as vitamins and growth regulators must be supplied. In tissue culture Murashige (1974) defined a sequence of stages, each with specific requirements and techniques. These are: Stage I; Establishment of axenic culture and stimulation of the explant to grow, Stage II; Multiplication, Stage III; Formation of roots and establishment of an autotrophic plant and Stage IV; Establishment of the plant in soil in a greenhouse or outside.

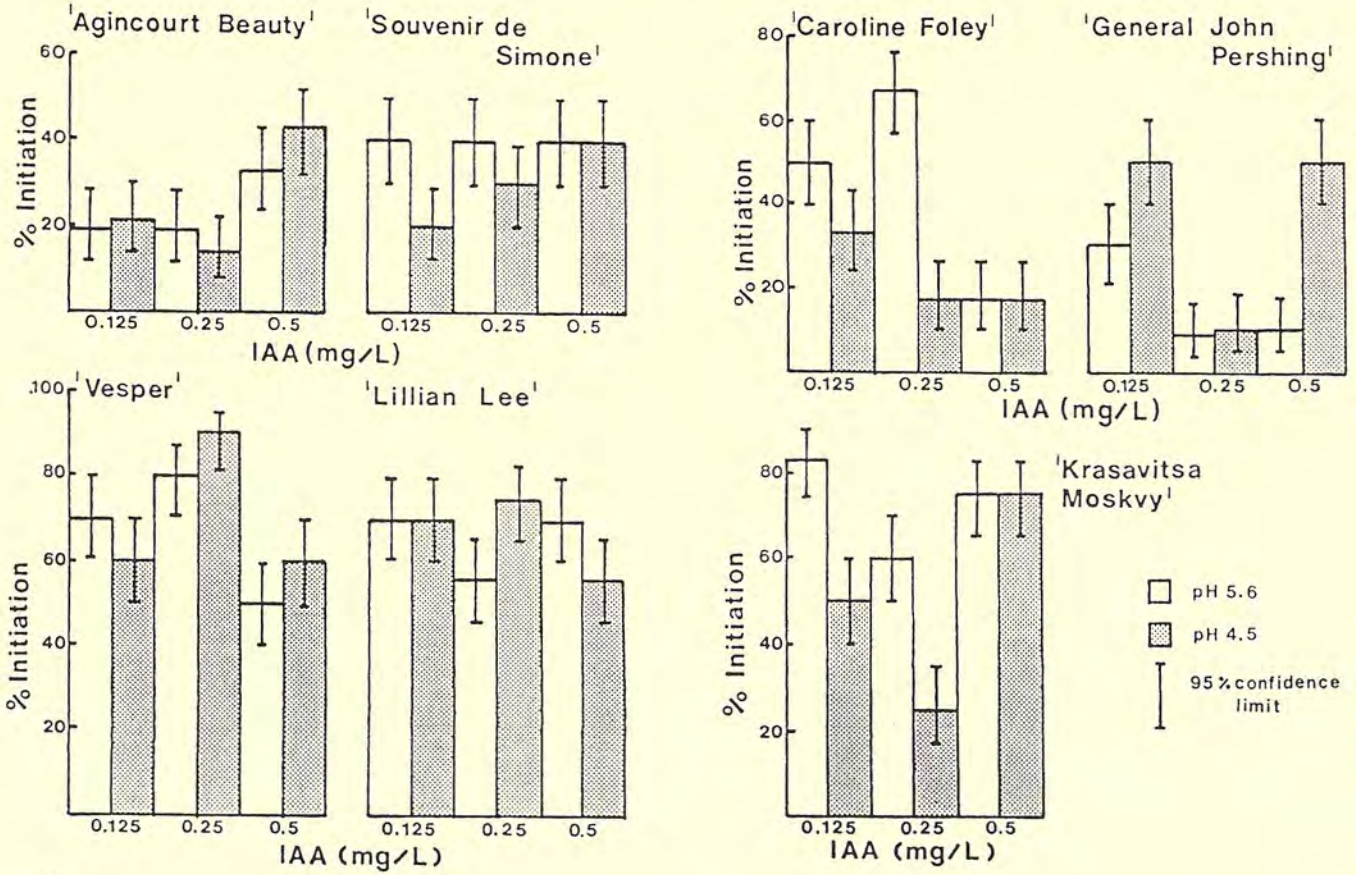


Figure 1:
Effect of IAA and pH on shoot initiation in 'Agincourt Beauty', 'Souvenir de Simone', 'Caroline Foley', 'General John Pershing', 'Vesper', 'Lillian Lee', and 'Krasavitsa Moskvy'. Media pH = 5.6 (open bars) or 4.5 (shaded bars). Vertical lines represent 95% confidence limits.

The information published on the *in vitro* propagation of 'Vesper' (Hildebrandt and Harney, 1983) will be used as a basis for comparing the *in vitro* propagation of a number of lilac cultivars. Suggestions pertaining to commercial adaptation and economic feasibility of this method will be made with special emphasis on ways to cut cost without sacrificing plant quality.

MATERIALS AND METHODS

The best explants for culture came from actively growing shoot tips of 1½ to 2 year old greenhouse-grown plants. Mother plants of 'Vesper' and 'James Macfarlane'* came from the Horticultural Re search Institute of Ontario, Vineland Station, 'Agincourt Beauty' from Sheridan Nurseries, Mississauga and 'Souvenir de Simone', 'Krasavitsa Moskvy', 'General John Pershing', 'Lillian Lee' and 'Caroline Foley' from the Royal Botanical Gardens, Hamilton. Plants could be placed in cold storage, at 4°C, for 6 weeks before explants were required and shoots cropped as a new flush of growth occurred. Explants, 5-10 mm long were dissected from these, disinfested in 0.5% sodium hypochlorite (10% commercial bleach) and cultured on solid medium containing Murashige and Skoog (MS) (Murashige and Skoog, 1962) salts and per liter; 100 mg myo-inositol; 1 mg nicotinic acid; 1 mg pyridoxine.HCL; 1 mg thiamine.HCL; 30 g sucrose and 7 g TC agar (K.C. Biological, Inc.) at either pH 4.5 or 5.6. Three different concentrations of IAA (0.125, 0.25 and 0.5 mg/liter) and 0.1 mg/liter BA were added to the basic medium. The medium was dispensed into test tubes, autoclaved at 1.4 kg/cm and 121°C for 15 min; and cooled at room temperature for 24 hours before use. Shoot tips were incubated at 26-27°C and light intensity 41uE $m^{-2}s^{-1}$ for 18 hr daily. Cultured shoots were transferred for proliferation to 10 ml basal medium plus 0.1 mg/liter IAA and either 7.5 or 10.0 mg/L BA. Subculturing onto fresh medium was done every 4 weeks at which time shoots were counted and measured. At transfer shoots were either trimmed to 2-4 cm, with apex removed, or placed horizontal, perpendicular or at 45° to the medium.

Some shoots were rooted in vitro with 0.05, 0.1, 0.2 or 0.4 mg/liter naphthaleneacetic acid (NAA) with 0.25 mg/liter BA. Other shoots of various sizes were dusted with 0.1% IBA, rooted in vermiculite in flats covered with clear plastic lids at 27°C and light intensity 65 uE $m^{-2}s^{-1}$ for 18 hr per day.

Rooted shoots were placed in vermiculite:perlite (1:1, v/v) with a mist system of 4 sec on every 8 min. Acclimated plants were placed in a refrigerator at 4°C for 7 weeks for a cold treatment.

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* 'James Macfarlane' was mislabelled. The plant may be 'Maiden Blush'.

RESULTS AND DISCUSSION

Initiation: Each cultivar seemed to have a definite response, which varied. The ease with which an explant established from least to most difficult was: 'Vesper', 'Krasavitsa Moskvy', 'Lillian Lee', 'Souvenir de Simone', 'Caroline Foley', 'General John Pershing' and 'Agincourt Beauty'. Aside from 'Vesper', which had been greenhouse grown for 9 months, disinfestation was a problem, which varied depending on the cultivar, and may account for anomalies with 'Krasavitsa Moskvy' and 'General John Pershing'. Growths from lateral or apical shoots could be used although the latter gives a better per cent initiation.

Multiplication: During the multiplication stage there was often a lag of 1-3 months, longer for more difficult cultivars (with poor rooting) before multiplication began. The conditions used are the basal medium plus 7.5 mg/liter BA and 0.1 mg/liter IAA. During the 2nd subculture more shoots of 'Agincourt Beauty' were produced at 10 mg/liter BA than at 7.5 mg/liter (Table 1). However, by the 4th subculture 'Agincourt Beauty' also responded better to 7.5 mg/liter BA (Table 2). Repeated cycling increased the efficiency of shoot production in 'Agincourt Beauty' in that the number of shoots increased as did their length. A comparison of shooting ability of the different cultivars exhibits specific responses depending on the cultivar but were not significantly different, except for 'Caroline Foley' (Table 3). The apices were removed to stimulate axillary growth and standardize explant length. It did not increase the number of shoot formed. For most cultivars, as the shoot number obtained per explant increased the shoot length decreased. Inserting explants at a 45° angle was as good or better than placing them horizontally or inversely in the medium and, therefore, this technique was used in most experiments.

***In vitro* rooting:** Shoots obtained during multiplication can be rooted *in vitro* but rooting never was greater than 60% with 'Vesper', 'James Macfarlane' and 'Souvenir de Simone' (Table 4). This was not good enough for commercial propagation. It was found that, in lilacs, the root systems formed *in vitro* would often die and new roots had to form before plants could become established. The reason for the root death was unknown, but was seen to be a general deterioration of the tissue.

***In vivo* rooting:** Results with Direct rooting were better than attempts to root lilac shoots *in vitro*. The percentage rooting in vermiculite was very much higher than any rooting *in vitro* (Table 5) and planting was 4-6 weeks faster. Roots formed *in vivo* were not lost after transplant in contrast to *in vitro*-formed roots. With most cultivars there was a gradual increase in rooting ability with increasing size of the shoots. The cultivars, 'James Macfarlane', 'Vesper', and 'Caroline Foley' showed good rooting over a variety of

TABLE 1

A comparison of 2nd subcultures of 'Agincourt Beauty' and 'Vesper' to two concentrations of BA. Media contained 0.1 mg/L IAA.

Cultivar	BA (mg/L) 7.5	10.0
'Agincourt Beauty'		
Number of shoots/explant	3.5 ± 0.31	6.0 ± 0.28**
Shoot length (mm)	10.9 ± 0.29	10.3 ± 0.28
'Vesper'		
Number of shoots/explant	8.8 ± 0.99**	3.9 ± 0.47
Shoot length (mm)	9.9 ± 0.35	12.8 ± 0.43

** significant at P = 0.01

TABLE 2

The effect of repeated cycling on shoot production and growth in 'Agincourt Beauty'. Medium contained 7.5 mg/L BA and 0.1 mg/L IAA.

	No. shoots per explant	Shoot length (mm)
1st subculture	2.3 ± 0.97	7.1 ± 0.50
2nd subculture	3.5 ± 0.31	10.9 ± 0.29
4th subculture	7.1 ± 0.71	20.5 ± 0.45

TABLE 3

A comparison of shooting ability of different cultivars. Medium contained 7.5 mg/L BA and 0.1 mg/L IAA.*

Cultivar	'Vesper'	'Souvenir de Simone'	'James Macfarlane'	'Gen. John Pershing'
Shoot/explant	6.9 ± 0.62	6.9 ± 0.60	6.8 ± 0.56	5.6 ± 0.54
Shoot length(mm)	13.4 ± 0.33	16.2 ± 0.35	9.9 ± 0.28	14.9 ± 0.37

Cultivar	'Lillian Lee'	'Caroline Foley'	'Agincourt Beauty'	'Krasavitsa Moskvy'
Shoots/explant	7.1 ± 0.63	3.3 ± 0.44	7.1 ± 0.71	5.8 ± 0.56
Shoot length(mm)	16.4 ± 0.36	25.8 ± 0.66	20.5 ± 0.45	20.0 ± 0.42

* Explants were 2-4 cm with apex removed.

TABLE 4
In vitro rooting of 'Vesper', 'James Macfarlane' and 'Souvenir de Simone' with varied NAA and 0.25 mg/L BA.

NAA (mg/L)	Per cent Rooting 'Vesper'	'James Macfarlane'	'Souvenir de Simone'
0.05	44 (37 - 56)*	50 (40 - 60)	36 (27 - 46)
0.1	50 (40 - 60)	40 (30 - 50)	36 (27 - 46)
0.2	56 (47 - 68)	10 (5 - 18)	36 (27 - 46)
0.4	49 (35 - 56)	30 (21 - 40)	25 (16 - 36)

* 95% confidence intervals

TABLE 5
Direct rooting in vermiculite of different cultivars with shoots of different sizes.*

Cultivar	Per cent Rooting Shoot size (mm) 5-10	11-15	16-20	21-30	≧ 30
'Vesper'	47%	76%	78%	60%	81%
'James Macfarlane'	95%	100%	100%	100%	
'Souvenir de Simone'	76%	57%	57%	76%	75%
'Caroline Foley'	52%	88%	100%	94%	92%
'Lillian Lee'	32%	33%	33%	28%	93%
'General John Pershing'	68%	58%	60%	100%	
'Krasavitsa Moskvy'	46%	57%	50%	83%	67%
'Agincourt Beauty'	40%	59%	13%	0%	0%

*Stim-Root 1 used for all samples.

TABLE 6
Survival rate of planted lilacs from *in vitro* culture.*

Cultivar	% Died	Treatment
'James Macfarlane'	30%	Mist bed
'Vesper'	38%	Mist bed
'James Macfarlane'	4%	Mist bed plus clear lids
'Vesper'	4%	Mist bed plus clear lids
'James Macfarlane'	0%	Mist bed plus clear lids & Benlate spray
'Vesper'	0%	Mist bed plus clear lids & Benlate spray

* Shoots were placed in vermiculite:perlite (1:1, v/v)

TABLE 7
Effect of cold treatment on plantlet growth of 'James Macfarlane'.

	Date of measurement		
	81.06.25	81.08.12	81.10.15
Cold treatment			
Shoot size (cm)	4.1 ± 0.48	4.3 ± 0.58	22.4 ± 1.11*
Control			
Shoot size (cm)	3.6 ± 0.46	5.7 ± 0.49	8.8 ± 0.72

* significant at P = 0.01

shoot sizes with shoots larger than 10 mm generally showing a better rooting percentage. About 75% of the shoots of 'Souvenir de Simone' rooted when they were less than 6 mm tall or bigger than 21 mm, with no explanation for the 57% rooting for shoots 6-20 mm in size. Although the containers were surface sterilized with Javex, the shoots of the cultivars 'Lillian Lee', 'General John Pershing' and 'Krasavitsa Moskvy' became heavily infested with a fungus and had poorer rooting. When shoots were 21 mm or greater in size rooting improved. With increased sanitation and timely application of anti-fungal agents increased rooting and fewer losses would possibly be expected in other different sizes. The maximum rooting of 'Agincourt Beauty', was only 59%, however this cv. is nearly impossible to propagate from softwood cuttings and is grafted commercially. Because some of the samples, primarily 'Agincourt Beauty', exhibited a toxic effect from the rooting talc, a liquid dip or half-strength Stim-Root I might be more effective. The differences in ease of rooting in different lilac cultivars was also found in grapes (Harris and Stevenson, 1979) and apple rootstocks (Lane, 1982).

Direct rooting of shoots is being used with an increasing number of plants to avoid difficulties in *in vitro* rooting e.g. Rhododendron (Anderson, 1978) and to save a month's time in establishing pot-grown plants e.g. birch (McCown and Amos, 1979) and raspberries (Pyott and Converse, 1981). This would appear to be the best method for lilacs as well.

Hardening off: Two sets of plants, from *in vitro* rooting studies, were set out in a vermiculite and perlite mix. If the plantlets were transferred to the flats in a well-ventilated potting shed the first plants set out would show signs of desiccation before the last ones were planted out. The percent of plants surviving increased as precautions to prevent transpiration and fungal attack were taken (Table 6). Sutter and Langhans (1979) found that carnation plantlets often lacked a proper cuticular layer when propagated *in vitro*. *In vitro* rooted plants (Lane, 1982) and direct rooted plants (McCown and Amos, 1979) both required 100% humidity when first transferred, which was then gradually decreased to harden off the tender plants. Once the plant had established, it could be treated like any other asexually propagated plant.

In vivo rooted plants were much hardier than the *in vitro* rooted ones and could be moved out of the mist bed in 2-3 weeks or half the time required for *in vitro* rooted plants. From the time shoots were placed in vermiculite for rooting to the time the rooted shoots were removed a fibrous root system could develop. Different cultivars exhibited different rooting abilities.

Plants could show an 8-fold increase in size from 2 to 7 months after *in vivo* rooting. Softwood shoots of the same cultivar that were rooted in the spring were only ¼ the size of the 7 month plant. Some lilacs, that established roots in Nov/80, came into bloom in Feb/82 and were about 40 cm high.

Cold treatment: The height of cold treated samples did not significantly change after 7 weeks in a refrigerator but were highly significantly different after another 2 months in a greenhouse. The control plants showed steady growth over the 4 month period, but were only one third the size of the cold treated plants (Table 7). The 7 weeks in a refrigerator seemed to break dormancy and the resultant flush of growth yielded a much larger plant. If, after another 7 weeks in the cold, another flush of growth could be obtained, a saleable plant would be produced in about half the usual time.

Increased bud break was not attained by removal of the apex.

Commercial applicability: The aforementioned results were all done in an academic milieu with considerable time spent on the measurement of shoot number and size, which was then analyzed statistically. This is far too labor intensive for a business. It will not matter to most customers how a plant has been propagated, but what it costs. Most tissue culture facilities are labor intensive with costs attributed to labor of about 75-85% (Anderson et al, 1977). The growing room and material costs both vary from 5-15% of total production cost but show little variation in the allocation of costs for a wide range of genera. Such high costs can only be justified if there is a high volume market demand for the product, a high market value of individual plants and co-ordination of demand and supply for a group of customers. The tissue culture of plants, which are easily produced in excess of market demands by conventional means may not be a financially viable operation. Cost accounting of capital requirements, fixed costs, machinery costs, variable costs, etc. must be made to price plants correctly and place emphasis on the more profitable ones (Phillips, 1981). Detailed records for accuracy are a must. Saleable units with different price tags, because of quality, bear the same average costs. Computers will be instrumental in working out true costs and keeping accurate records.

Kelowna Nurseries, five years ago, estimated a cost of 40¢/unit for apple rootstocks and although costs have increased, a lilac cultivar today wholesales for $2.25-3.25, $3.75 for grafted plants. These production costs can be met with *in vitro* culture. A business must

pick up a method already developed and apply it to as many cultivars as possible. Table 3 indicates a number of lilac cultivars can give good multiplication rates using a standard concentration of growth regulators and environmental conditions (light and temperature). Einsett and Alexander (1984) have reported a similar method for the *in vitro* propagation of lilac (*S. x hyacinthiflora*) which was also applicable to other members of the family Oleaceae, including species of *Forsythia, Ligustrum* and *Fraxinus*. Efficient rooting (Table 5) and a high multiplication rate are necessary before the project will be economically feasible. Phyton Technologies, Inc. has a customer who requires 50,000 lilacs one time/year. Further studies with *in vitro* storage may be the way to allow a build up of such numbers prior to rooting and shipment. Phyton Technologies is currently using the Hildebrandt and Harney (1983) method but have found that some cultivars require certain modifications. Until favorable increases in multiplication occurs some cultivars will not be included in the regular production schedule. The method is also being used by Congdon & Weller Nursery and Briggs Nursery in the United States. Lilacs are being propagated commercially by *in vitro* culture. Public demand for the different cultivars will determine the plants required and ease of propagation will dictate the economic feasibility.

Half-priced bananas: Because labor costs comprise 75-85% of costs, the fastest way to decrease expenses is to cut labor costs. One way to do this is to eliminate a stage, whenever possible, such as *in vitro* rooting with a direct method. Hildebrandt and Harney with lilac (1983) and *Deutzia* (1984) have reported better rooting and a decrease in acclimation time with direct rooting. Shoots without roots can be removed from containers, washed and handled faster. Some hardening occurs with the direct method and mortality in transfer to the greenhouse is lowered. A savings of 55% in labor costs with this modification in procedure has been reported (Anderson *et al*, 1977). Simplify procedures by using the same medium for as many different plants or cultivars as possible or for 2 stages (I and II for orchids).

Optimum cultural and media conditions produce the maximum number of shoots from each explant. The greater the number of shoots produced per month, the lower the production cost per unit. There are different mortality rates at different points in the production process. Hedge your bets whenever possible. Use parent material that is greenhouse grown and therefore decrease the contamination rate during initiation. Don't transplant shoots that are too small in the multiplication stage e.g. 2 mm for lilac shoots. Small shoots grow slowly and may not survive. Pay close attention to minor details.

Try to set up a continuous production program to spread out overhead costs and pre-sell the product whenever possible.

Supplies will be more economical if deionized water rather than distilled is used. Use grocery store sugar rather than analytical grade sucrose. Ten ml of medium per tube will work instead of 15 ml. The MS salts can be cut to 1/4 or 1/10. Buy second hand equipment if possible and don't buy a microscope unless absolutely necessary. Using a pressure cooker instead of an autoclave, baby-food jars, pre-packaged mixes, a home-made laminar flow hood, a triple beam balance and serial dilutions of stock solutions, a small laboratory could be set up for about $1,000-2,000.00 (Stoltz, 1979).

Conclusion: I hope this talk has given you some insight into the possibilities, probabilities, commercial applicability and the practical side of *in vitro* culture with regards to *Syringa vulgaris*. Tissue culture will ultimately become a prominent form of propagation for woody plants. For lilac, the methodology has been worked out and is currently being applied. The object is to provide a superior product at a competitive price. The future has arrived.

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Progress Report on Lilac Witches'-broom Research

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Mycoplasmalike organisms (MLO) cause lilac witches'-broom (LWB) disease, as described (1,2). The following report was presented to the 15th Annual Convention of the International Lilac Society and it summarizes our research on LWB since the above publications.

Additional Symptoms: Symptoms of LWB are not limited to witches'-brooms. Deliquescent branching (loss of apical dominance, abnormally short twigs), curved and upward-angled twigs, and zig-zag or irregular branch growth were observed on infected *Syringa prestoniae* cultivars when the branch structure was exposed in the dormant season.

The premature growth of vegetative and flower buds in September and October was noted on many lilacs. The MLO were often detected in this growth when it occurred on shrubs with other LWB symptoms. A few lilacs with symptoms limited to this premature growth also tested positive for MLO. These observations suggest that the swelling and growth of lilac buds in the fall sometimes can be a symptom of infection by MLO.

When infected lilacs refoliated in the spring, slight to severe twig dieback became evident on some shrubs, especially following severe winters. Leaves on infected shrubs often were slightly chlorotic and undersized and flower production could be sparce or nil. Symptoms often were limited to interior brooming along the base of the main branches, while the upper and outer canopy appeared healthy. The MLO have been detected in this outer normal appearing growth, so the pathogen can be systemic in lilacs even though symptoms are limited. Some lilacs displayed apparent tolerance to this disease, as shrubs with brooming and clumped growth had full-sized green leaves, normal flower production, and no twig dieback.

The disease was identified in cultivars of *S. vulgaris* (Table 2), but infected lilacs in this species usually had mild or no symptoms. The prevalent symptom was the premature swelling and growth of vegetative or flower buds during the fall. The MLO could be detected in shoots bearing these buds, as well as in a few cultivars of *S. vulgaris* which showed no obvious symptoms. This suggests that lilacs can be symptomless carriers of the disease.

Detection of MLO: We have an improved method for detecting MLO in the phloem of lilacs. Thin sections of lilac shoots or petioles are stained with DAPI (4', 6-diamidino-2-phenylindole-2HCL), which induces a blue-white fluorescence of the DNA in MLO membranes when viewed with a fluorescence microscope. The DAPI method (pers. comm. Wayne Sinclair, Cornell Univ.) for the detection of MLO in plants is more sensitive and easier to interpret than the Dienes' stain procedure described previously (2).

Range of LWB: Major lilac collections with LWB, and susceptibility within the genus *Syringa*, are summarized in Tables 1 and 2, respectively. This compilation is based on symptoms of LWB, as determined by on-site inspections and from samples sent to this laboratory, and on the detection of MLO in lilac shoot samples by Dienes' stain or DAPI. This is a tentative range of LWB because not all major collections of lilac have been examined.

Graft Transmission: Transmission of MLO from infected to healthy *S. prestoniae* 'Royalty' by grafting has been demonstrated (2). The MLO also were transmitted to, and LWB symptoms developed in, *S. x josiflexa* 'Anna Amhoff' grafted with buds and bark patches from infected 'Royalty'. The infected 'Anna Amhoff' declined and died within 5 months after initial symptoms were observed.

To confirm that *S. vulgaris* lilacs are susceptible to LWB, buds and bark patches were excised from infected 'Royalty' and grafted onto healthy *S. vulgaris* lilacs. A permanent bud graft union was successful on the *S. vulgaris* (cultivar unidentified). After the grafted 'Royalty' bud had broken dormancy, LWB symptoms developed on the scion shoots. Symptoms on the *S. vulgaris* understock were limited to a single shoot which developed from the bud directly above (8 cm) the established scion. Leaves on the shoot showed interveinal chlorosis and downward curling and a few axillary buds elongated. Tests with DAPI for the distribution of MLO in the grafted lilac detected MLO only in the 'Royalty' scion and in the *S. vulgaris* forced shoot just above the scion. These results suggest that although *S. vulgaris* lilacs are susceptible, MLO do not always move systemically in these hosts.

Similar graft transmission tests between lilacs and white ash, *Fraxinus americana*, are in progress to determine the possible relatedness of LWB and ash yellows (3), which is also caused by MLO.

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3. Matteoni, J.A. and W.A. Sinclair, 1985. *Role of the mycoplasmal disease, ash yellows, in decline of white ash in New York State*. Phytopathology 75:355-360.

Acknowledgements

This research was supported in part by a grant from the International Lilac Society.

TABLE 1. Lilac collections in which lilac witches'-broom has been identified.*

COLLECTION	LOCATION
Arnold Arboretum	Jamaica Plain, Massachusetts
Boerner Botanical Gardens	Hales Corners, Wisconsin
Dominion Arboretum	Ottawa, Ontario
Highland Park	Rochester, New York
Holden Arboretum	Mentor, Ohio
Lilacea Park	Lombard, Illinois
Morton Arboretum	Lisle, Illinois
Niagara Parks	Niagara Falls, Ontario
Royal Botanical Gardens	Hamilton, Ontario

* A tentative list based on research as of July 1986.

TABLE 2. Lilac taxa in which lilac witches'-broom has been identified as of July 1986 according to symptoms and the detection of mycoplamalike organisms in the phloem.*

SPECIES	CULTIVAR
Syringa x diversifolia	'Nouveau'
S. x henryi	'Lutece'
S. henryi x tomentella	'Prairial'
S. x josiflexa	'Anna Amhoff'
	'Elaine'
	'Enid'
	'Guinevere'
	'Royalty'
S. josikaea	'Eximia'
S. julianae	
S. laciniata	
S. meyeri	
S. microphylla	'Superba'
S. nanceana	'Floreal'
	'Rutilant'

S. oblata var. *dilatata*	
S. x persica	
S. prestoniae	'Alexander's Aristocrat
	'Alice'
	'Calpurnia'
	'Charmian'
	'Constance'
	'Coral'
	'Dawn'
	'Desdemona'
	'Dorcas'
	'Elinor'
	'Francisca'
	'Isabella'
	'James Macfarlane'
	'Juliet'
	'Lavinia'
	'Maybelle Farnum'
	'Miranda'
	'Nellie Bean'
	'Olivia'
	'Paulina'
	'Portia'
	'Regan'
	'Silvia'
	'Ursula'
	'Virgilia'
S. sweginzowii	
S. villosa	
S. villosa x sweginzowii	'Hedin'
S. vulgaris	'Capitaine Perrault'
	'Dr. Charles Jacobs'
	'Fountain'
	'Grand-Duc Constantin'
	'Kim'
	'Le Gaulois'
	'Miss Ellen Willmott'
	'Mme. Florent Stepmen'
	'Montaigne'
	'Petersons'
	'Pinkie'
	'Souvenir de Henri Simon'
	"Sulte"
	'Vestale'
S. yunnanensis	

* MLO detected by Dienes' stain or DAPI fluorescent stain; mostly unconfirmed by electron microscopy.

Lilac Renovation at the Agriculture Canada Research Station Morden, Manitoba, Canada

Campbell Davidson, Woody Plant Breeder and
Richard Enns, Arboretum Assistant

The lilac collection at the Agriculture Canada Research Station, Morden, Manitoba, encompasses some 543 accessions, the majority of which were planted by Bill Cumming during the 1960s. Newer cultivars have been added in more recent times but at a much reduced rate than when Dr. Cumming was responsible for the program.

The lilac planting has really received very little special care. Our labour resources have been reduced continually over the last 25 years and there is no sign of this trend reversing itself. Single plants are spaced approximately eight feet apart in a row and 12 to 16 feet between rows. Usually two plants of each accession were planted. Row-cultivation was the principal method of weed control, however, in recent times herbicides (Linuron and Roundup) have been used effectively.

As one can imagine the plants grew and it became increasingly difficult to maintain control of the weeds. Cultivars in many instances had grown together so that it was difficult to distinguish individual plants, let alone find the labels! Plant height approached 15-20 feet!

As a result of this, a decision was reached to rejuvenate the planting. This sounds quite straightforward but proved to be much more of a task than we realized. Very little pruning had previously been done. Most plants were multiple-stemmed with diameters between 4" to 6". The exceptions to this were the Japanese Tree Lilacs. They were predominantly single-stemmed.

We sought and obtained a grant through the Unemployment Insurance Commission (Section 38) to hire five labourers. These young fellows had very little previous experience in working with trees or shrubs.

The project was initiated May 7, 1984 - before bud break. The main tools used for the trimming were chain saws although pruning shears were also required. Cutting some of the smaller branches with chain saws was tricky. The workers had to be very careful to avoid saw blades and falling stems. We had a very high repair rate on the chain saws but fortunately our workers came through unscathed.

At the initiation of the project plants were cut off close to ground level but as we progressed the cutting level was raised to 12-18". Cutting however proved to be only part of the battle. It took much time to untangle and to stack the pruned stems as for the cutting.

With over 500 accessions we had quite a pile of brush! We used a large front-end loader with long finger-like extensions on the bucket to pick up and move the stems to our burning pile. It certainly took a lot of trips!

Progress was fairly steady. Five weeks later, on June 15, we finished the task. We were concerned with the lateness of the season but have yet to see any problems. We had hoped to have the planting cut before flowering but we were not successful. Leaves were out in profusion and flowering was almost complete by the time the last stems were cut. None of the cuts were treated with wound dressing. Such materials, being expensive and timely to apply, are not required.

Our work didn't stop here however. We then used a large Howard rotovator powered by a 80 HP tractor to reduce the size of the plants. Many had spread to 10-12 feet in diameter. The plots were trimmed approximately 4' square. The between row spaces or alleyways were then cultivated with a deep tiller. We hope this will help to reduce soil compaction caused by the tractor hauling brush which was significant.

New growth was initiated within several weeks of cutting. It was very lush and heavy. Many suckers were observed, particularly where we had rotovated. To help combat these we used the herbicide Reglone to desiccate the sprouts. This worked quite well and helped to control the spread since additional rotovation may have aggrevated the problem.

During 1985 we recorded observations on growth and performance. These included height, winter injury ratings, vigour ratings and abundance of flowering. We chose six major groups to monitor. There was significant variation in performance of the various groups. *Syringa villosa* and *S. reticulata* types regrew the most during the growing season and *S. josiflexa* and *S. Prestoniae* types grew the least. Growth in the second seasons was considerably less variable. Most plants grew between 25 and 40 cm. Flowering was very sporatic in the second year. Only *S. villosa* types flowered to any significant extent. Vigour and winter injury ratings indicate that most plants are still in reasonable health and have not suffered dramatically. These results are still very preliminary. It will take about five years before we can gain a good understanding of the overall effect of the renovation. One of our earliest concerns related to mortality. The answer to this question has been positive. Survival of our planting is near 90%. Loses were restricted to very old and rather weak plants.

Another problem that we encountered was lilac borers. Prior to the renovation we had not observed much borer damage. The insects were likely present but damage was minimal. In the second year after renovation we noticed dead stems throughout the planting. It is likely that the borers are finding the new vigourous shoots

easy targets compared with the older plant material. In response to the abundance of food resources we are observing an increase in the borer population. It appears that we may have to implement a control program this season. We will be monitoring the planting closely.

We did not fertilize the planting prior to or after renovation. This summer we will be conducting a soil sampling program to ensure nutrient levels are adequate. We do not want to cause a great stimulation in growth. Any fertilization will be low maintenance levels only.

What does the future hold? We will monitor performance of the planting for at least another three years. At that time, we hope, we will have a good idea about plant performance and the effects of renovation under prairie conditions.

Would we do anything different if we had to do it again? Not a great deal. It was a very large job and we feel it was handled fairly efficiently. Plant responses to date have been good and ill effects have been minimal. One thing however, next time the Japanese tree lilacs wouldn't be pruned. These should have been left alone. It will take a long time before these recover to their former stature.

Babes in the Lilac Woods

(or: A consumer's Guide to the Buying of Lilacs - and what should the International Lilac Society be doing to educate the public and the nurseryman about the most desirable varieties to grow.)

By Trevor J. Cole, Agriculture Canada

A recent survey of Canadian nursery catalogues shows that there are 49 cultivars of *S. vulgaris*, 14 of *prestoniae* and only three *hyacinthiflora* available to the public. Of these 49 *vulgaris* cultivars, 35 are on sale at only 1 or 2 nurseries.
Conversely, 'Andenken an Ludwig Spaeth', 'Belle de Nancy', 'Charles Joly', and 'Mme. Lemoine' are each available at over 50% of the nurseries surveyed. While I have nothing against these particular varieties, what have they got that is so special that they are grown to the virtual exclusion of all the others? If I want to grow a single pink, a magenta or a light mauve why are these so hard to find?

Also, what have the early-flowered *hyacinthiflora* group done that they should be so shunned by nurserymen? There is a need to inform the average home-owner that the flowering season of lilacs can be increased by the selection of the various types.

I give a night school course in home landscaping and, when talking about shrubs, I tell the class "If you have only room for one lilac, plant a French hybrid. If you have room for two, plant a French hybrid and a Preston lilac. Room for three? Use the previous two plus an American (i.e. early) hybrid, and if you can plant four, then add a Japanese tree lilac. After this, you can start to add to the number of different cultivars you grow. In this way, you will have lilacs in bloom for a month or more."

As members of the I.L.S. we need to grow a wide selection of lilacs for ourselves, to evaluate them under our own conditions and be sure that we are recommending the best. This way we can say "I have grown . . .". If you can say it with a firm enough voice, people will believe you and growers will start to produce the varieties that you recommend. If, every time you give a talk to a garden club in your area, you recommend the same varieties, people will go to the garden center and ask for those particular ones. Any nurseryman will start to stock a plant if he keeps getting requests for it.

The I.L.S. has Lilac Performance Forms which are just great for keeping a record of growth and flowering and general evaluation. How many of you use them? Don't rely on memory. You are much more of an authority if you can back up your statements with facts and figures. BUT, first we need to know that what we are growing is true to name. As an example, when I first became interested in lilacs, I went through the collection at the Central Experimental Farm, and matched them against the checklists: single pink, double mauve, double white, etc. Walking through the lilacs with more knowledgeable members of the I.L.S. when the convention was held

in Ottawa, I found that some were wrongly named - even though they were the right color.

This brings me to the need for a better method of describing colors. The Royal Horticultural Society has a very good "Colour Chart" (which by the way has just been reprinted), but few amateurs are willing to fork out 25 pounds sterling in order to be able to describe colors accurately. Also, most of the fans of color patches do not relate to the shades we need for lilac flowers. The present system of seven colors, single or double, is not really very precise. What we need is to agree on a simple color chart that would be available to everyone. How about the color samples from one of the major chains of paint and wallpaper stores? Surely one of them would have a good selection in the blue to lilac to pink to purple range.

Having agreed on a standard color system it needs members to color code their plants and send the results in to a central registry. This would bring forth some interesting results. Does soil type have the effect on lilac flower color that is generally thought? How about pH? What is the influence of weather? Are different nurseries selling different plants as, for example, 'Andenken an Ludwig Spaeth'?

If it turned out that there was a wide variation in flower color of some varieties, this would lead to two conclusions: a) that this variety is very responsive to changes in its environment, or b) that there has been a bad mix-up in the nursery trade sometime in the past. Cuttings from plants at either end of the color range, grown in one place, would show which of these hypotheses was true.

If it turned out to be climate or soil which is the cause, then maybe this variety should be placed on a "Not recommended list" as being unstable. On the other hand, if a nursery mix-up is to blame, then perhaps an "expert committee" could decide which were the true-to-name plants, and which the rogues.

In this way we could discover worth-while varieties, other than the four mentioned in the second paragraph, which are stable and which would fill gaps in the range of colors available. We could start promoting these. This will mean a lot of work by a great many people. The collection of information from across the country can be done by any dedicated member. Growing comparison varieties could also be carried out by many people since it would not be necessary to grow the entire range, just the extremes of color.

If the International Lilac Society is to be THE authority, the place that people turn to for advice, then we must know what we are talking about. If you are not willing to go to bat for lilacs then why are you a member of the society?

Etiolation and Tissue Culture as Lilac Propagation Techniques

David Haskell, Owen Rogers and Douglas Routley

INTRODUCTION

Syringa vulgaris 'Helen Champlin', a newly developed lilac cultivar from the University of New Hampshire, is difficult to root and the lack of sufficient stock has delayed its release to the nursery trade. Therefore, two recently developed methods, stock plant etiolation and tissue culture were tested under a research scholarship from the International Lilac Society. The cultivar 'Charles Joly' was used in the etiolation experiments because it is relatively easy to root and sufficient stocks of potted plants were available. The etiolation procedures were developed by Nina Bassuk and others at Cornell University (1), and tissue culture methods were by Dr. John Einset of the Arnold Arboretum (6). Etiolation is a simple method requiring no special equipment or skills and could be used by any home gardener. Tissue culture involves the cytokinin control of *in vitro* shoot multiplication and requires special facilities but is useful to commercial propagators.

ETIOLATION

Materials:

Black plastic used for shading
Shoot banding materials (black tape, plastic, or aluminum foil)
Rooting hormone and fungicide (Hormodin 3 + Benlate)
30 *Syringa vulgaris* 'Charles Joly' (2-year-old potted plants)
Mist bed

Methods: Because of the time frame of the school year, the plants were forced into growth during February and March. They were brought into a refrigerated storage room in December for the required cold period prior to forcing. In mid-February they were transferred to a sunny greenhouse with a minimum night temperature of 65 degrees F. At this time the plants to be etiolated were put on carts and completely covered with black plastic to provide nearly complete darkness. It is important to darken the plants before bud break to insure complete etiolation as opposed to blanching. Blanching is the process of depriving already green tissue of light to stop photosynthesis and the production of chlorophyll thereby turning the tissues white. Etiolation is caused by the growth of new tissue in the absence of light which prevents the synthesis of virtually all pigment. The covered carts were kept in the greenhouse for convenience of watering. A dark room, to avoid possible overheating, might have been better.

Scientific Contribution Number 1441 from the New Hampshire Agricultural Experiment Station.

After ten days of etiolation, the 3-5 inch shoots were banded near the base with black plastic fastened with tape. Using a combination of plastic and tape was a tedious job that would probably be made easier by using black tape or aluminum foil. The north-facing side of the black plastic shading was then removed to allow acclimation of the plants to light and gradual greening of all etiolated tissue, except the banded area. The shading was completely removed over a one week period and the plants were put in direct sunlight.

Cuttings were stuck at two, four, and six weeks after banding for the etiolation treatment and two, four, and six weeks after budbreak for the non-etiolated. No measurements were taken on the size differences between the two, four and six week cuttings. The bands were removed and cuttings taken from the etiolated stock plants with the cut made just below the banded area. All cuttings were dipped in rooting powder consisting of 0.8 percent indolebutyric acid (Hormodin No. 3) containing 10 percent Benlate and stuck in a rooting medium of 25 percent sand, 25 percent perlite, and 50 percent vermiculite. They were placed under an intermittent mist system and records taken when the first cutting had roots longer than 1 inch.

RESULTS AND DISCUSSION

Rooting percentages of 80, 88, and 73 were achieved for the cuttings taken from the etiolated stock plants two, four, and six weeks after banding respectively. In the same order of sticking dates the non-etiolated cuttings rooted at 50, 55, and 0 percent. Cuttings taken from the non-etiolated stock plants six weeks after budbreak had not rooted at the conclusion of this experiment, seven weeks after sticking.

Differences between the two treatments were not limited to rooting percentages. Cuttings taken from the etiolated stock plants rooted in three to four weeks and were much more vigorous compared to seven to eight weeks for those from non-etiolated stock plants. They were also much stronger plants when rooted. This could have been due to the etiolation treatment but more likely was a result of the speed with which they rooted.

TISSUE CULTURE

Materials:

Lilacs - *Syringa vulgaris* 'Olivier de Serres', 'Charles Joly', 'Madame Abel', and 'Helen Champlin'

Growing Medium -

Murashige + Skoog salt mixture	4.3 g/l
Thiamine	0.4 mg/l
Pyridoxine	5 mg/l

Nicotinic Acid	5 mg/l
Myo-inositol	100 mg/l
n6-isopentenyl adenine (cytokinin)	6 mg/l
Sucrose	30 g/l
Agar	7 g/l

Lab facilities including:
- Balance for weighing out media components
- pH meter
- Containers and manipulative tools
- Autoclave for sterilizing media in containers
- Laminar flow hood for sterile working surface
- Controlled environment area for growing cultures

Methods: A growing medium was prepared by weighing out each of the ingredients listed above, except the agar, and adding them to distilled water of about eight percent of the final desired volume. Once they had been dissolved, the pH was adjusted to 5.6 to 5.8, the agar added, and the solution brought to the desired volume with more distilled water. It was then heated with constant stirring to dissolve the agar and then dispensed into test tube culture containers. The tubes were then capped and autoclaved at 120 degrees C., 20 psi, for twenty minutes.

Two basic procedures were used in the tissue culture process: initiation and subculture. Initiation involved the removal of tissue from whole plants and transfering it to sterile *in vitro* conditions. Subculturing, in this experiment, is the division of already established *in vitro* tissue into more cultures or propagules.

The first step in initiating the lilac culture was choosing and excising appropriate tissue from the stock plants. Shoots were taken from greenhouse-grown plants because they are easier to disinfect for the establishment of sterile cultures than those grown outside. Material is best taken at about the same time as for cuttings; new growth that is actively growing and firm. If tender new growth is used it does not survive the disinfection well. After the shoots were taken from the stock plants the leaf blades were removed and the stems cut into single-node segments. They were then disinfected by washing them in distilled water with a wetting agent and put in a flask containing 0.5 percent sodium hypochlorite solution (10% Clorox). The flask was sealed with parafilm and swirled so that the entire inside surface was disinfected. The amount of time the stem segments are kept in the Clorox solution is critical. If they are kept in too long it can kill them and if not long enough, all contaminants will not be killed. About ten minutes worked well in these experiments.

All subsequent handling of the stem segments must be done in a sterile environment to avoid recontamination. This was accomplished by using a laminar flow hood that blows sterile air over a working surface without turbulence.

The Clorox solution was drained off and the tissue washed three times with sterilized, distilled water. Next the segments were trimmed to remove tissue damaged during the disinfection process and partially imbedded in the media in test tubes. Scapel and tweezers used to handle the segments, called explants, were repeatedly dipped in 95 percent ethanol and flamed over a burner to keep them sterile.

Subculturing requires the same handling under the sterile hoods but no disinfection because they are already aseptic. Only recontamination has to be avoided. To do this the test tubes were opened one at a time under the hood, the explants removed, divided into new single node propagules, and put into new test tubes with fresh media.

The explant segments were allowed to grow for about six weeks, under lights at 78 degrees F., although some were left for up to twelve weeks without harm. During this time they developed into single or sometimes double shoots that very rarely branched. After six weeks the shoots were either subcultured or used as cuttings.

Cuttings from the shoots developed *in vitro* were placed on a bench with particular care to avoid wilting. Contamination was not a problem here since they were no longer kept *in vitro*. The small shoots, however, wilt easily due to improperly functioning stomata and underdeveloped cuticle (3). To avoid this, cuttings were taken one at a time from the test tubes, prepared for sticking on wet paper towels, and covered with plastic immediately after sticking. Some minor wilting did occur but all recovered. Vermiculite was used as the rooting medium in small flats which were put in plastic baggies in the growth chamber. Some cuttings were also successfully rooted without bags in a fog chamber.

Rooted cuttings were potted in a 1:1 mixture of pasteurized soil and Pro-Mix. These plantlets were then acclimated to the greenhouse environment by keeping them in a plastic box in the greenhouse and gradually removing the cover.

RESULTS AND DISCUSSION

All four cultivars were successfully propagated using tissue culture. As Einset reported for 'Excel' (6) there seemed to be no significant differences among them. Results did vary for a few batches but this was apparently due to the differences in technique and explant selection. Plants of 'Helen Champlin' had not yet been established but they were successfully initiated and multiplied in culture. At the time of this report, cuttings had been stuck and were showing signs of rooting. Of all the cultures attempted, 73 percent of the initations and 89 percent of the subcultures developed into normal shoots without contamination. Cuttings taken from the cultures rooted at 76 percent. There was an average six-fold net in-

crease in propagules per generation after losses due to contamination or abnormal growth. All rooted plantlets were acclimated to the greenhouse.

CONCLUSION

Etiolation of tissue on plants grown in the greenhouse significantly improved the rooting of 'Charles Joly' cuttings. It has also been effective on other genera and other lilacs (1, 11, 12). If these results can be extrapolated to plants grown outdoors, it will be a useful propagation method for people with one or a few lilacs.

Tissue culture to propagate woody ornamentals, including lilacs, is a commercially profitable method. These experiments prove that the procedure is effective for four lilac cultivars including 'Helen Champlin' which is very difficult to root from cuttings by more conventional methods. A relatively small number of cultures was maintained during the development of these techniques but not problems appeared which would prevent the development of the large quantities of plants necessary for commercial success.

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International Lilac Society

15th Annual Convention

May 29 to 31, 1986 - Hamilton, Ontario, Canada

TREASURER'S REPORT
May 30, 1986

Receipts:

Funds received from Marie Chaykowski 7-9-85	$ 16,712.27	
Membership dues - thru 4-21-86	3,701.50	
Book Sales	63.50	
Total Receipts thru 4-30-86	$ 20,477.27	$ 20,477.27

Expenditures

Service charges (Bk.) - Chk. printing $ 19.35 Rubber Stamp $ 8.25	$ 27.60	
Sarah N. Schenker	44.30	
Owen Rogers (Wm Emerson Research Fund)	870.00	
Owen Rogers (Newsletter Printing)	365.85	
Walter Oakes (postage $66, envelopes 7.48)	73.48	
Funds transferred to M.M. Acct. # 1-23536 Naperville National Bank & Trust Co. Naperville, IL 60540 8-10-85	15,000.00	
Total expenditures and funds transfer	$ 16,396.43	$ 16,396.43

Reconciliation: ckg. acct. #76-976-2
Naperville National Bank & Trust Co. - Naperville, IL 60540 - 4-30-86

Total Receipts - 8/9/85 through 4/30/86	$ 20,477.27	
Total expenditures and funds transfer - 8/9/85 through 4/30/86	16,396.43	
Ck. Bk. and/or statement bal. - 4/30/86	$ 4,081.04	$ 4,081.04

Money Market Acct. #1-23536

Naperville National Bank & Trust Co. - Naperville, IL 60540

Funds Transferred from Ckg. Acct. #76-976-2 8/9/85	$ 15,000.00	
Funds received from Marie Chaykowski - 11/26/85	1,145.59	
Special Funds Rec'd from Mrs. Reva Ballreich	200.00	
Interest earned - 8/9/85 thru 4/26/86	744.28	
	$ 17,089.87	
Less Service Charge (Opening Acct.)	10.00	
Bal. on hand, and/or Statement Bal. - 4/26/86	$ 17,079.87	$ 17,079.87

C.D. #038-001-8902642 - Bank One of Akron, Akron Ohio

Rate of Interest: 10.10% Maturity Date: 9/6/87

Opening Balance	$ 2,000.00	
Balance per Capitalization Notice of 3/6/86		$ 3,930.57

Funds Being Held in Special Accts:

Life Memberships (27)	$ 2,700.00	
Legal	350.75	
By-Laws	210.25	
C. C. Clark Fund	700.00	
Upton Scrap Books	4,613.23	
Hans Conreed Memorial	50.00	
Education/Research	3,279.45	
John Wister Memorial	120.00	
Mrs. Reva Ballreich (Special Purpose) (designated PRINTING FUND) 4/16/86	200.00	
Checking Acct. #76.976-2	4081.04	
Total Funds Being Held in Special Accts.	$ 16,304.72	$ 16,304.72

Funds Available: 7/9/85 through 4/30/86

Checking Acct. #76-976-2	$ 4,081.04	
M.M. Acct. #1-23536	17,079.87	
C.D. #038-001-2902642	3,930.57	
	$ 25,091.48	$ 25,091.48
Funds being held in Special Accts.:		16,304.72
		$ 8,786.76
Funds in M.M. Acct. #1-23536	17,079.87	
Less funds in Special Accts.	16,304.72	
	$ 755.15	755.15
Checking Acct. #76.976-2	4,081.04	
C.D. #038-001-2902642	3,930.57	
	$ 8,011.61	$ 8,011.61
Total operating funds available - 7/9/85 thru 4/30/86		$ 8,786.76*

* Treasurer's Note:

Interest earned figure appearing as a part of the M.M. Fund should be apportioned among the **Special Accts.** - same should apply to such earnings as may be reported in connection with the C.D. Acct. which will mature as of 9/6/87, thus these accounts would reflect (as they should) growth.

I would further suggest that the various 'Memorial Funds' be consolidated and simply be held as a 'Memorial Fund', that is, unless specific constraints presently prohibit such action.

Respectfully submitted,

/s/ Walter E. Eickhorst, Treasurer

Duplication of Minutes Project Report

The Board authorized me to spend up to $100.00 to duplicate two copies each of past minutes: one copy for the President and one for the Secretary. Originals are to be stored with the Archives.

To reduce the bulk of papers, the detailed committee reports were not duplicated when the results are recorded in minutes.

Duplication costs	$39.00
Postage	4.90
Total	$44.30

Respectfully submitted,
/s/ Sally Schenker, Ex-secretary

Auction Committee Report

Following the precedent of last year the lilac auction at Hamilton offered two types of sale: the auctioning of 25 lots (read choice cultivars) as against tagged sales at three prices ($5, 7.50 and 10 Canadian currency which was pegged at $1.25 US). Elsie Kara and Pauline Fiala served as fund collectors. Walter Eickhorst served as auctioneer. He was assisted by Max Peterson and Daniel Cohen. Four 'Krasavitsa Moskvy' plants each fetched a record $58 Canadian. Total receipts were $2030.55 US and $1098.45 Canadian. A total of 385 lilacs and lilac motif articles were generously donated by the Royal Botanical Gardens of Hamilton, Agriculture Canada of Ottawa, Bill Horman of "Sunny Fields", Detroit, Nancy Emerson of Delhi, NY, and Daniel Ryniec of Brooklyn Botanic Garden for which the Auction Committee and the Society are most grateful.

Respectfully submitted,
/s/ John C. Carvill, Chairman

Propagation, Distribution and Seed Exchange Committee

As an insertion into the February Lilac Newsletter, four lilacs ('Adelaide Dunbar', 'Firmament', 'Mrs. W.E. Marshall' and the Preston hybrid 'Isabel') were offered. Forty-one lilacs were shipped by Wedge Nursery of Albert Lea, Minnesota, at a cost to I.L.S. of $341.65, resulting in a net profit to I.L.S. of $37.85 out of $379.50 charged.

Respectfully submitted,
/s/ John C. Carvill, Chairman

Convention Committee Report

The Denver Botanic Gardens welcomes the International Lilac Society's 1987 Convention. The Assistant Director, Mr. Andrew Pierce, will be the local chairman. Mr. Pierce will be present at the Royal Botanic Gardens to give a preview of the conference in 1987.

Respectfully submitted,
/s/ W.K. Martin, Chairman

Emerson Scholarship Report

Through the generosity of many International Lilac Society members a total of $875.00 was raised to be awarded as a scholarship in memory of William Emerson. The scholarship was awarded to David Haskell, a student of the University of New Hampshire, last fall to work on methods of propagating lilacs. Colonel and Mrs. Schenker represented the Society at the presentation ceremony.

During the 1985-86 year David used two methods of lilac propagation. He demonstrated that the new tissue culture technique works very well over a range of lilac cultivars including one of New Hampshire's introductions which hitherto seemed unpropagatable. David also showed the efficacy of etiolation as a means of improving rooting of cuttings taken in the greenhouse. If this method can be adapted to plants growing in the field, it would make lilacs as easy to root as *Forsythia.*

Respectfully submitted
/s/ Hanssen Schenker

Publications Committee Report

The Lilac Newsletter was published every month this year in full size through June, July and August, thence in much reduced size. The problem is that the Editor *pro tem* does not have the time to be a good editor. Also, since the Newsletter is outside his university responsibilities and considering the fact that he does not type, he is obliged to charge the Society for secretarial time plus paper, mimeograph masters, postage, *etc.* All this could be done by outside printers but the cheapest estimate obtainable was twice what he was able to do using the University's equipment and supplies with the collating and stapling being done in his kitchen.

I wish to acknowledge the help of two individuals. Charles Holetich still prepares the covers for each month with all the standard printing in place. He also prepares the Directory edition for December. And Pauline Fiala each month folds up to 375 Newsletters, stuffs them into envelopes and affixes address labels supplied by Charles. Charles Holetich also does the same thing for the Canadian Newsletter mailings.

As to the future, the Society needs an editor with time to put out a quality newsletter such as we have seen up to the time when I agreed to become Editor *pro tem* "just for the summer". I am not going to abandon my post, but, until an editor steps forward, the Society is stuck with these anemic issues that you have seen this past year. The Board, last year, authorized bi-monthly or even quarterly Newsletters, if needed, but, since my problem is not material but time, it doesn't matter whether I have to find a little time each month or double the amount every two months. I like a monthly letter, even if it is late.

One thing that helps is material from you to publish. This has not been the problem, but if even a thin Newsletter is to have interest it must have a balanced collection of information. The more you send in the more the editor has to work with. Last year the Editor published 126 pages at a cost of $1,136.90.

Respectfully submitted,
/s/ Owen M. Rogers, Editor *pro tem*

Upton Scrapbook Project

At long last the second volume of the Upton Scrapbooks of Information is a reality. The printing contract will be signed next week (first week of June) and the Scrapbooks will be ready for distribution by the end of July. The July issue of the Newletter will contain information and an order blank.

The second volume, like the first, will contain the material from Volumes III and IV of the original Scrapbooks. They cover roughly the period of 1925 to 1943. It was an exciting time for horticulture with the publication of Susan McKelvey's monograph, "The Lilac" and the discovery of rooting hormones to help in the propagation of cuttings. All this and much, much more are included in the volumes along with pictures of the most important people of the time with many letters and autographs.

As always, such an undertaking requires assistance from many people. I would single out Arch McKean because, without his very generous donation, we would not be able to proceed.

Respectfully submitted,
/s/ Owen M. Rogers

1. Wilson Stampe
2. Pat Cohen
3. John Carvill
4. Pauline Fiala
5. Nancy Emerson
6. Fr. John Fiala

Report of Election Committee

Ballots cast: 148 of which eleven were declared invalid because these failed to follow instructions - there being two classes of candidates: incumbents and non-incumbents. The following candidates received the plurality in their category:

INCUMBENTS	NON-INCUMBENTS
John Carvill	Pat Cohen
Nancy Emerson	Fr. John Fiala
Pauline Fiala	Andrew Pierce
Winfried Martin	Wilson Stampe

There were five write-ins.

Respectfully submitted,
/s/ Elsie Kara, Chairman

May 1986

The Honors and Achievement Award

The Highest Award of the International Lilac Society

presented to
Arch McKean
Grand Beach, Michigan

For his singular support of the Society particularly of its publications and projects.

For establishing the 'Arch McKean Award' to be conferred annually upon the Society member who best publicizes the Lilac and promotes the Society.

For his own contributions in promoting Lilacs, notably by his donation to the City of Elmhurst, Illinois, of a tract of land and its lilac collection for the benefit of its citizens and for his contributions to institutions and individual lilac collectors to expand and maintain lilac collections and for his own special collection of lilacs containing notable historic cultivars.

presented to
Charles D. Holetich
Royal Botanical Gardens, Hamilton, Ontario, Canada

For his devotion to the lilac, especially in the development of the 'Katie Osborne Lilac Gardens' of the Royal Botanical Gardens at Hamilton, Ontario, Canada, making it the finest lilac collection in the world and for whose development he has been responsible for the past many years.

For his management skills in the Society publications, both the 'Lilac Proceedings' and the monthly 'Lilac Newsletter'.

For his long and continuous, dedicated service to the Society in many projects, including the Lilac Color Study and for making lilac cultivars, unobtainable elsewhere, available to members through the annual lilac auction.

For his co-ordinating Canadian lilac activities with American and Foreign regions and for serving faithfully as an active member of the Board of Directors and presently as President of the Society with outstanding ability.

The President's Award

presented to
The Royal Botanical Gardens
Hamilton, Ontario, Canada

FOR ITS PREEMINENT 'KATIE OSBORNE LILAC COLLECTION', one of the finest and largest lilac collections in the world, which is of inestimable value both to botanical scientists as well as to individual lilac lovers and the public in general.

For its contribution to the continued development of the lilac by maintaining difficult to obtain species as well as the newest cultivars of *Syringa vulgaris*, unique in world lilac collections.

For its contributions to the development of the International Lilac Society over the past decade in making facilities available to Society publications, for its generous contributions of new and outstanding lilacs to the Society auction and for the high excellence and superior knowledge of the lilac by its staff.

For being the International Registrar for the Genus *Syringa*, a unique distinction.

For its hospitality in hosting the 15th Annual Meeting of the International Lilac Society in May of 1986.

presented to
The University of Guelph
Guelph, Ontario, Canada

For the historic lilac collection in its Arboretum which is open to students and the public for study and enjoyment and for investigating lilac culture in the laboratories of its plant sciences.

For courtesies extended to the International Lilac Society upon its 15th Annual Meeting, May 1986.

given to
The Principal Botanic Garden, Academy of Science U.S.S.R.
at Moscow

For its noteworthy collection of *Syringa* species and cultivars including 56 novelties of domestic origin, first planted in 1946. This outstanding lilac collection contains many of the lilac selections of the late Leonid A. Kolesnikov, holder of the Gosudarstvennaya premiya, U.S.S.R. and the Directors' Award, the highest hybridizing honor of the International Lilac Society.

For maintaining this outstanding lilac collection for the benefit of the people of the U.S.S.R. as well as for visitors.

given to
Parks and Recreation Department of the Borough of Brighton
Brighton, England

For its National Lilac Collection at Withdean Park, occupying a 15 hectare site on the main London Road and containing over 250 cultivars of lilacs. This notable collection planted about 1960 by the late Ray Evison, O.B.T., V.H.M., is maintained by the Brighton Parks and Recreation Department for the education and enjoyment of the public. Its preeminence as the largest lilac collection in England received recognition in 1982 by the National Council for Conservation of Plants and Gardens.

The Award of Merit

presented to
Virginia Hildebrandt
University of Guelph, Guelph, Ontario, Canada

For her pioneer studies in microculture propagation of the lilac cultivar 'Vesper' thus furthering the economic nursery propagation of lilacs making many newer lilac cultivars more economically available through nurseries to the public.

For her dedicated research in developing micropropagation techniques.

presented to
David Schmidt
Nursery Supervisor, Royal Botanical Gardens
Hamilton, Ontario, Canada

For his skill in lilac nursery techniques that have made the 'Katie Osborne Lilac Collection' at the Royal Botanical Gardens one of the world's finest collections and for making newer lilac cultivars available to the International Lilac Society lilac auction at its annual meetings.

presented to
Joan and George Kidd
Nepean, Ontario, Canada

For dedicated work on behalf of the International Lilac Society in its many projects and especially in promoting its Annual Conventions.

For promoting the lilac and developing an outstanding private collection at their Steeple Hill home, Nepean, Ontario.

presented to
Chris Graham
Superintendent and propagator at the
Royal Botanical Gardens, Hamilton, Ontario, Canada

For his skill in lilac propagation thereby maintaining the Katie Osborne Lilac Collection at the Royal Botanical Gardens in preeminence among public lilac gardens throughout the world, especially with newer and difficult to obtain lilac cultivars.

For making newer lilac cultivars available to the International Lilac Society's annual auction.

presented to
Sheridan Nurseries
Etobicoke, Ontario, Canada

For its outstanding work in offering and introducing some of the newer and finest cultivars of lilacs including 'Agincourt Beauty', 'Slater's Elegance' and 'Ivory Silk' and making the better lilac cultivars available to the general public.

For its efforts in providing some of the finest plant materials to gardeners and horticulturists.

presented to the
Niagara Parks Commission School of Horticulture
Niagara, Ontario, Canada

For promoting the lilac in an outstanding horticultural display for the enjoyment of the public and especially for its unique beds design of newer and finer lilac cultivars.

For its training of young horticulturists particularly in the field of lilac culture and for using the lilac's beauty in landscape design adapted for Canada.

For its hospitality to the International Lilac Society at their 15th Annual Convention.

Arch McKean Award

presented to
William R. Heard
Heard Gardens, Johnston, Iowa

1. William Heard
2. Arch McKean
3. Pauline Fiala

For his dedicated promotion of the Lilac and the Society through his publications and personal contact and for distinguished service to the Society's Board of Directors.

Erratum

The previous edition of LILACS (14: 34, 1985) under "President's Award": Bickelhaupt Arboretum is located at Clinton (not Davenport) Iowa. The aging Editor regrets and humbly asks forgiveness.

Pocahontas, Highland Park, May 7, 1986

LILAC 1986