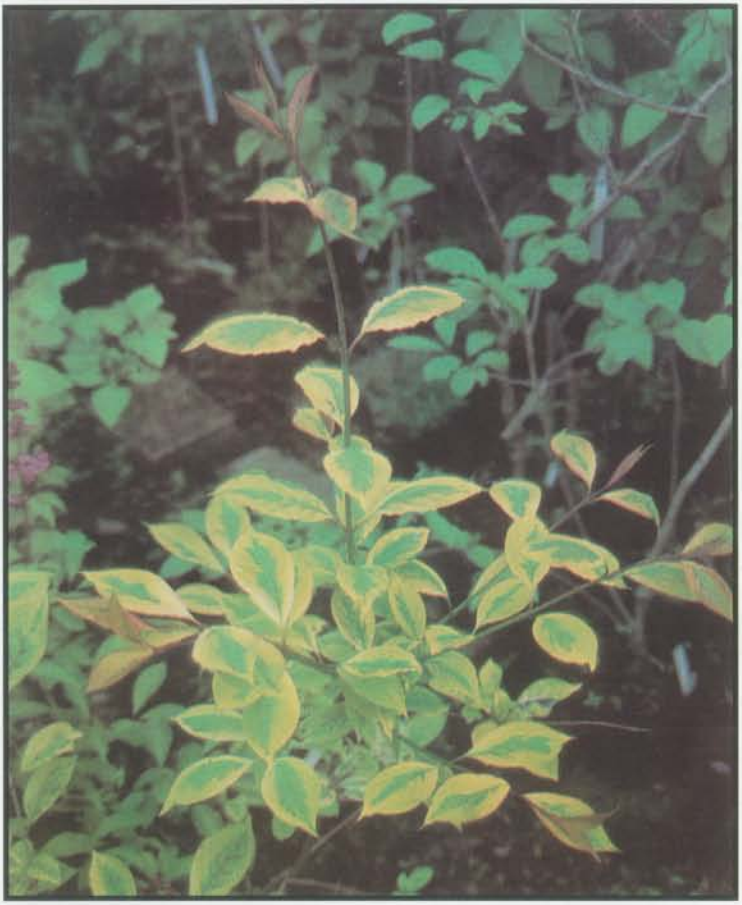
Lilacs

VOLUME 31, NUMBER 4
FALL 2002



QUARTERLY JOURNAL

of the International Lilac Society

IN THIS ISSUE: Report from Mackinac Island

VOLUME 31, NO. 3 QUARTERLY JOURNAL

A Publication of
THE INTERNATIONAL LILAC SOCIETY

ISSN 1046-9761

Copies of this publication are available by writing to the International Lilac Society, c/o David Gressley at the address below. $5.00 (U.S.)

International Lilac Society

Membership Classification *(U.S. Funds)*

Single or Family / Annual	$ 20.00
Sustaining	30.00
Institution/Commercial	35.00
Life	250.00

• Mail membership dues to Asst. Treasurer William F. Tschumi

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.

International Lilac Society Website Address: **http\\lilacs.freeservers.com**

LILACS 2002 PUBLISHED OCTOBER 2002

TABLE OF CONTENTS

PAGE

Quarterly Reminder 78

Next Issue Deadline 78

Covers 78

President's Message - Robert Hoepfl 79

European Newsletter - Colin Chapman 80

Atlantic Regional Report - Ted Collins 83

Convention: Info for 2003 Convention - Caroline Dion 84

Report from Mackinac Island Trip - Brad Bittorf and Bruce Peart 85

Nurse Grafting of Lilacs - Thomas Thekathyil 87

More About His Majesty the 'Silver King' - Charles Holetich 89

More Convention Pictures 90

On the Scent of Designer Blooms - London Daily Telegraph 92

Breeding Low Growing Lilacs - J. Giles Waines 95

Tips for Beginners - Richard Poffenbaugh 97

Welcome New Members 99

Cover Story

Front Cover

The lilac New York. This is a new lilac from Colin Chapman (see his European Newsletter). The name is not yet registered but Colin and Freek Vrugtman are working on that. Photo Credit: Colin Chapman

Back Cover

'Silver King'. The photo is sent by Charles Holetich and goes with his article on "...his majesty..."

Next Issue Deadline

The deadline for the winter issue of **Lilacs** will be December 8, 2002. This is the membership issue, so take a moment to check your listing to be sure that it is correct.

Quarterly Reminder

In those areas where there has been drought this summer, be sure to see that your lilacs are well watered this fall. Lilacs can stand a fair amount of drought but there is a limit. If there has been too much moisture in your area, check the drainage around your lilacs. While lilacs can stand some dryness, they do not like "wet feet."

PRESIDENT'S MESSAGE

by Robert Hoepfl,

Greetings and salutations to all you lilac fanciers. Here in the northeast it has been a hot, humid and dry summer. Since mid-June the Rochester, NY area has experienced half again as many 90-degree days as normal. Also, we are nearly five inches below average rainfall for this period. Doc Lilac says he's reverted to being a water boy, a position he started longer ago than he's willing to admit. We are not alone when it comes to dry conditions; Max Peterson expresses similar circumstances.

It is with a heavy heart that I convey to you recent developments in Highland Park that may spell the demise of the Lilac Collection as presently known. In an effort to reduce the Monroe County budget deficit, $23 million for 2002 and an estimated $68 million in 2003, horticulture was virtually eliminated. My concern is that there will be no staff person knowledgeable to monitor the lilac collection. No staff person for propagating, labeling, recording plant location or pruning. This is truly a devastating blow to Highland Park and to the Lilac world. One hundred ten years after John Dunbar planted the first lilacs in Highland Park has Kent Milham planted the last? What will happen to the lilacs that remain? Will ILS ever be invited back to Rochester? Will there be anything worth returning for as lilac fanciers?

Our Awards Committee finished it's term following the 2002 convention. Presently Amy Plamann and Marcia Hoepfl have agreed to work on this Committee. I'm asking for another member to step forward and assist them in this important aspect of our organization. Anyone interested and willing, please contact me. On a similar note, I urge you the members to nominate people for Awards. Mail your suggestion to Amy or Marcia; please include background information on the individual or place nominated.

Remember Frank and Sara Moro and their family in your prayers as they struggle to care for their infant son Colby.

Mark your calendars for the 2003 ILS Convention (mid-June) in Cap-a-l'Aigle Quebec, Canada.

European Newsletter

Colin Chapman finally reaches the Pacific Ocean at San Clamente, California, 06 April 2002

I am being nagged by Freek and, trust me, that is not a state that rational folk should aspire to. On September 16 last year I wrote my postscript to the horrifying events of five days before. For reasons I stated in that article I concluded that I might "possibly" give my un-named variegated preston hybrid seedling (#NF62(a)/91) the name 'New York'. Freek has reminded me of that statement and is asking what I am going to do about registering the name.

Almost a year later I have two great doubts and one absolute conviction to reconcile, and it is here that I could do with some help. Any opinions, for or against, would be gratefully received and seriously considered. My first doubt, of course, comes from asking if the plant is good enough to commemorate such a monumental tragedy. My second doubt is whether it is appropriate for someone who is not American to make such a gesture.

Those are my doubts, but my conviction comes from the plant and its features which seem to me to symbolize what happened at that fateful, hateful hour. When the leaves first emerge they are suffused and edged with the color of flame. The leaves, when they open, show a central flare of dark green against a bright golden background – like a jagged plume against an unsuspecting sunny sky. The flower is simple and white and it further hints of innocent humanity because in the tube there is a touch of flesh pink and the florets are pendant and bow their heads as if in respect.

During and after flowering, the variegation coarsens and fades. At first I thought this to be a disqualifying fault but it can be seen as a retreat into anonymity by the plant for a time which could be in keeping because, for much of the year, we have to suppress grief and put it aside in order to get on with the job of living.

Finally, because it flowers in late May to early June I feared it might not truly represent the events of September 11th. There is a sense, though, in which it

does because there is a connection with another great American tragedy. In the poem "When lilacs last in the dooryard bloom'd", Walt Whitman wrote of the assassination of President Lincoln using the symbolism of the lilac. In one line he wrote:-

"I mourn'd, and yet shall mourn with ever returning spring." (1)

Thus, with each returning spring, the flame colour, the spectacular leaves and then the lax, innocent flowers will remind us not to forget.

Please help me to decide and so bring a little peace to the mind of our beloved Registrar. If I do call the lilac 'New York' then the space on which it grows in my garden will forever be American territory. In fact, it would be the second square yard of our garden to be declared American territory. The other one contains a certain rose and I will tell you that particular story sometime, if someone will remind me.

I received recently a delightful letter from Life Member Tom Thekathyil in Tasmania. Tom is testing methods of propagation including nurse grafts and tissue culture. He has an impressive collection of over two hundred which has been put together with a discerning eye and which is certainly at the cutting edge of modern developments. Looking at the names of the plants, I suspect that Frank Moro, Evie King and Roger Coggeshall have been suppliers. I note that Tom has *Syringa x chinensis* 'Duplex'. I made a public appeal for this apparently "extinct" lilac in **LILACS** Vol 24 No. 1 1995. As a result of that appeal, in less than seven years it has spread from Kiev to Denmark, the United Kingdom, Canada, the United States and now, Australia. That is what the International Lilac Society is all about. I suppose I will have to tell that particular story in full also, sometime soon.

Before the last Convention I had the absolute pleasure of being shown as much as possible of the beautiful state of Arizona by Brad Bittorf and Amy Plamann. There were too many highlights encountered on a road trip which took me from Tucson and the beautiful Sonora Desert (with which I fell irrevocably in love) via the Grand Canyon to the Mojave Desert, Los Angeles and Hollywood to mention here, but I will mention three relevant ones. From Tucson to Bisbee we found several good shrubs of *S x chinensis* in desert conditions which was interesting enough, but finding one in full flower only fifty yards from the site of the gunfight at the O.K. Corral in Tombstone left this particular little boy jumping in ecstasy.

The second "highlight" had nothing to do with lilacs. We called in to see the old Native American pueblo at Wupatki on the edge of the Painted Desert. A flat-roof house built in the eleventh century of bright red sandstone and jet black shadows glowed under a totally cloudless sky in a sea of beautiful lavender-blue desert grass. The silence was deafening. The peace was disturbing. The spiritual presence was absolutely palpable. And three Pronghorn Antelopes wandered playfully by.

The third of these highlights came after a long hike with Amy up a rocky canyon and back. We found a sushi bar where we recovered in an appropriately civilized way. The sushi place was next to a superstore which we visited. Whilst Amy collected some groceries I browsed the magazine rack where I extracted something of interest. I called Amy over and showed her the April copy of the American Edition of **Country Living Magazine.** As I flicked the pages I explained that exactly one year before, the English edition had run a feature which used our lilacs as the background. As I said this, the magazine opened at a full page shot of my *S x h "Buffon"* and all the rest of the pictures were there too. If anyone still has that copy and wants to write to me I will gladly tell you what the other lilacs are. Just fancy! In a superstore in Tucson, Arizona, I find pictures of my lilacs taken in my garden back home. What a wonderful trip that was. Thank you Brad and Amy; I will never forget it.

In the next edition I will provide something very special. I have news and photographs from Moscow which I must share with you. To do so, I will need more picture space than just the front and back covers.

(1) From Walt Whitman, **Leaves of Grass**. New English library Ltd., London, 1955.

Colin Chapman
Norman's Farm
Wyverstone.
August, 2002.

e-mail: lilacnf@hotmail.com (replies will return to you under the name of "Roland Rat". Please, don't ask!).

Atlantic Regional Report

Late Report, but better than never:

Activity and communication in this region is increasing but could be better. A Regional Newsletter idea a la Peter Ely is probably a great idea.

Locally, the emphasis is on promotion and awareness of lilacs. We even sold them at Christmas to help students raise money for a trip to Japan. The kids painted one gallon pots purple in our greenhouse, and sold hundreds at their school. During Festival time we had lilacs already forced into bloom in the greenhouse. We gave away hundreds of blossoms in small tubes of water and preservative. (A real big hit!) We sold hundreds of bouquets at a dollar a blossom from our large mature lilacs.

The most exciting and unusual twist was our involvement in producing a film for a Lilac Perfume company. Hopefully, it will be presented at the 2003 convention along with the perfume.

We continue to furnish large potted lilacs for display at local banks and businesses and retrieve them later. Presentations were made to three Garden Clubs in May, and more are already scheduled for next year.

A new mission of ours is to somehow dissuade the public from purchasing a disproportionate number of purple lilacs only. Any ideas or comments will be gratefully accepted.

Ted Collins

Convention 2003: Info for 2003 Convention

Greetings from Cap-à-l'Aigle, Thérèse Deschesnes.

The preparations for your next convention are going quite well. The convention is scheduled for June 5, 6, and 7, 2003, in the beautiful village of Cap-à-l'Aigle in the Charlevoix region. You will receive within few months all details about the schedule of the convention and the registration documentation. You'll have the choice among many activities and we will keep you informed about all details concerning housing and transportation.

For now, you can already make your flight reservation planning to arrive at Quebec City Airport by June 5th and leaving on June 8th. We will provide shuttles to bring you from the Airport to Cap-à-l'Aigle which is about 150 km, so less than two hours from Quebec City. But it will be possible to arrive one or two days earlier than that in case you want to visit our town and participate in many great activities. We will give you details about that in the next issue of the journal.

Lilacs shall be blooming in early June so you will be able to enjoy the fragrance and the beauty of our thousand lilacs from hundreds of varieties that run along our main street and overhang the majestic Saint Lawrence River.

A team of twenty-five persons from the Horticulture School of the Montreal Botanical Garden is already at work to proceed at the plantation of 3,500 saplings. The second phase of the work will begin while you'll be reading these lines.

During your stay at Cap-à-l'Aigle, we will offer you the opportunity to enjoy many activities arising out of the convention such as whale excursion, cruising on the Malbaie River, golf at the brand new golf course of the prestigious Manior Richelieu, a visit to the Cabot garden or visits to workshops of craftsmen, and other artists of the region.

You will receive more information about these activities in the registration documents that we will send you soon. We'll do everything to make sure that you will have great time with us and that you will cherish the memories of your visit to Cap-à-l'Aigle for many years to come.

See photo on inside back cover.

Caroline Dion

Mackinac Island 2002 ILS Lilac Seminars

In mid-June, Bruce Peart and I traveled separately and met at Mackinac Island, Michigan. Our purpose was to present informative seminars about lilacs on behalf of ILS as a part of the 53rd Mackinac Island Lilac Festival.

While Bruce had done this several times before, it was a new experience for me, and one in which I delighted. The "Island Charm" to which Chamber of Commerce Director Len Trankina often refers was frequently evident. I'd like to publicly thank all the good Island people who made provisions for us throughout the trip, including Len and the rest of the Chamber of Commerce, ILS member Tim Leeper, the people of the Harbor View and Lake View Hotels, Village Inn, Island House, and especially Mackinaw Shuttle, who rescued me when plans went astray. (Well, missing a flight provided a chance to explore the whole Detroit airport, and something to talk about!) Let me also thank Bill Horman, Don Wedge, Bill Utley, and Peter Ely for helping establish this relationship, and to Dave Gressley for allowing me to substitute for him this year.

Those of us who have previously had the honor of visiting Mackinac Island, such as during the 1997 ILS Annual Meeting and Convention, know that Mackinac is a place apart from much of the world. Sure, there are cash machines and cable TV, but there are also horses, relaxation, and beauty all about. That natural beauty and island ambiance is infused with, and built upon, the attraction of lilacs. The people of Mackinac have recognized and developed the charm of lilacs integral to the identity of the island itself. This is used to summon people to the island–many of whom are drawn because of their own interest in and appreciation of the lilac.

Those who arrive can:

- Shop for a plethora of lilacs items and collectibles like none I have known anywhere else (but note: I have not yet visited Cap-à-l'Aigle!),

- Experience lilacs all about–in public and private settings ranging from churches to parks to forts to wooded lots to the Governor's summer "cottage,"

- View renditions of lilacs real and imagined, on elevator doors, in stained-glass windows, on golf courses, on and around horses, and even in lilac-colored fudge!

- Witness the economic and emotive power of lilacs that supports a 10-day festival, that brings people from all over (including a school band from Hawaii!) to one place, that assembles bands and corps and even musicians dressed as clowns to a delightful parade that caps the festival of lilacs.

My traveling companions often heard me use the phrase "all because of the power of lilacs." I said this as I consumed scrumptious food, as I toured the beautiful, restive and historic scenes, and as I marveled at the momentum that this place and this festival has accrued.

Ah, but I have become distracted. My intention was to document our efforts on behalf of ILS. As we promoted the ILS, but we tried first to help people understand the Syringa L. genus, knowing that they would eventually succumb to the scent, the colo(u)r, and the community of lilacs. (Hmm, this sounds like the "Resistance is Futile" mantra that the mythical "Borg" use in the television program *Star Trek.* Perhaps we are all just servants of the lilac!)

The presentations covered a history of lilacs, a description of the many varieties and their attributes, education about how they are classified, instructions for care and maintenance of our floral friends (masters?), and some insight into the human past and exciting future of lilacs. Of course we illustrated this presentation heavily, with photos from our own experiences and from RBG archives. (During one presentation, we incorporated a photo taken on the island just one hour before the session!) Those who were not aware of the subtleties and variety of lilacs went away knowing more, and taking notes and cards as their gateways to new information.

Sessions were all very well attended. The Mackinac Island Chamber of Commerce does a wonderful job of promoting these sessions and providing the mechanisms to promote the lilac. Can there be a better situation than to arrive to a room filled with people already curious about the lilac, eager for more information? This made our task easy. Even better–these people were able to walk outside and immediately apply their new knowledge. The many lilacs that were donated by the ILS and that now populate the island are starting to bloom. What a great demonstration–we could show people a photo of, say, 'Astra' and then direct them to Windemere Park where an 'Astra' was just breaking bud!

The International Lilac Society must continue to work with Mackinac Island as long as we are invited. It would be great if we could give similar presentations to equally receptive audiences elsewhere. Every person who walks away knowing a little more about lilacs, appreciating a new subtle aspect of their beauty, or knowing more about their science, history, and organization is not only a potential member of ILS but a further friend of the lilac.

See photo on the inside back cover.

Bradley Bittorf and Bruce Peart

Editor's Note

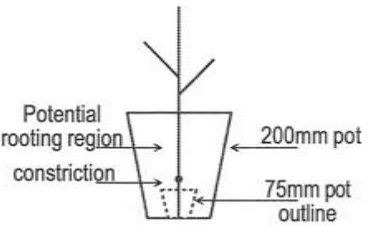
ILS strongly recommends growing lilacs on their own roots. This prevents all the problems of understock growth becoming confused with scion stems and any problems of graft incompatible. There are, however, some specialized situations such as when you receive one or only a few stems of a special plant which needs all the tender love and care you can give it to keep it alive. Traditionally, stems like this have been grafted or budded into a distinctive rootstock such as privet or a lilac with a foliage really different from the scion's leaves and then this construct used as a stock plant to produce cuttings that can be propagated on their own roots.

Tom Thekathyil, an ILS member from Tasmania has used this grafting technique to "establish plants on their own roots" and is willing to share his results. "Thank you, Tom."

Nurse Grafting of Lilacs

Around 250 lilacs were root grafted (or grafted low down on stem) in the spring (Southern hemisphere) of 2001 on one year old seedling *Syringa*, mainly of *S. komarowii ssp komarowii,* as well as some *S. tomentella.* Seedlings were grown in 75 mm tubes or in 100 mm pots but these need to be shifted at regular intervals to prevent roots from penetrating into the soil below. They had made vigorous growth, some of them standing at 1 meter by the end of season.

Rootstocks were cleaned at the base to permit grafting as low down on the stock as possible. Newly acquired cultivars were wedge-grafted onto stock with tape going up as far as rootstock only with the remainder of the graft being waxed to prevent ingress of moisture.



Several weeks after grafting cable ties or tie wrap (available from electrical outlets) were placed on the successful takes above grafting point to constrict scion growth so as to induce callus formation and root initiation. Plants had the bottom half of their root systems removed so that plants would sit low in the 150 mm pots transferred to (see diagram).

The plants made surprisingly strong growth with some of the varieties requiring potting on to 200 mm pots and putting on as much as 1.2 meters of growth. However, towards the end of the season it was observed that despite the cable ties having cut deeply into the stem, and heavy callus having formed at the bases,

many of the scions had failed to set root. Only about half of the 200 successful grafts had initiated scion root growth.

There were notable exceptions with smaller plants such as *S. pinnatifolia* and *S.* x *prestoniae* where the cable ties failed to constrict growth but the plants nevertheless initiated scion rooting - this may simply point to a propensity of these cultivars to be suited for rooting as cuttings if sufficient material were available. There were also many instances of scion failing to root but had started sending up suckers from their bases; these would almost certainly have rooted later in the season.

Where plants had self-rooted, however meager the root system, the foreign rootstock was removed and the cultivar repotted in 50 mm pots. The rare graft that broke off despite having no roots was also potted on as well in the hope that roots will be initiated the following spring.

It would have been an interesting exercise to segregate the *S. vulgaris* cultivars into those which set root easily and those which were recalcitrant; however, given the small numbers of each variety grafted, any conclusions would have been misleading in this particular case.

At the end of the first season all grafts had their tops trimmed down to 300 mm to encourage branching, permit sucker development and prevent boggy growth forming awkward plants. Where the scion was still dependent on the foreign rootstock it is necessary to check on the root system to remove all visible rootstock suckers before they become a nuisance, as would have been case with some of the grafts checked so far. In many cases it would be nearly impossible to prevent undesirable rootstock suckering if it were not removed before planting out. For this reason neither of the rootstocks utilized above could be recommended for permanent use in the field.

It remains to be seen if the unrooted scions will succeed in establishing their own roots in the second season. Despite the apparent high failure rate this would appear to be a simple means of multiplying small numbers of newly acquired cultivars to establish stock plants on their own roots.

Tom Thekathyil

More about His Majesty the 'Silver King'

Prompted by Colin Chapman's article in the Spring 2002 issue of **Lilacs**, about *Syringa vulgaris* 'Silver King', I took upon myself to visit the original (paternal) plant he wrote about.

I concur that the portion of a floret may have an occasional "sparkle" of gold but only on a bright, sunny day when a direct sunlight is bathing it and the observer's eye is able to view the inner details of a floret. The silver colour, however, I could observe in the central area if the floret, where the petals meet the tube, on a sunny and equally on a cloudy day, so I trust Dr. Lemke was guided by this impression to name the cultivar 'Silver King'.

My photographs unfortunately don't properly support my description which proves that an eye is a more intricate and complex instrument than a camera. Since propagating material for Colin's plant was taken from this singular specimen at RBG, their comparative observation may be of interest, since soils and climatic conditions at RBG and Wyverstone - Stowmarket, England are very different. The plant at RBG is growing on top of an Eastern exposure slope, in partial shade of an ash tree (Fraxinus americana) nearby. Soil, other than addition to the planting hole at planting time is poor and has tendency to dry quickly. The plant alternates the amount of blossom biannually, but in both instances the inflorescence are born on the upper half of the plant. This most likely is a genetic trait rather than shortage of sunshine hours caused by a nearby tree.

As buds open, the petals display its rosy colour which within a day or two change into creamy-silvery white. This silvery colour is retained longer in 5 - 6 mm central portion of the floret and can be seen only at close observation.

Since lilacs have tendencies to transform their appearance of colour day by day, and varies with sunshine angle it is observed, I suggest that when a lilac draws your attention from a distance you should observe it also from a close-up distance, first as a complete inflorescence and then as a floret. Pluck out one floret and observe it from a different angle, under different light conditions and on different days of its development You will notice an intricate formation of a unique beauty in "hidden corners" of a part or a whole and may be surprised to the point to wish to stop the clock and make "the beauty" last forever. Each time you experience the impact of visual beauty mixed with personal feelings write it on a paper and share it with others. The heavens, I am told, have no seasons. It has a collection of beauty which is everlasting and changes occur only in our visual perception as we move from one object (cultivar) to the next. That means the cross-hybridization will continue to infinity.

Charles Holetich

More Convention Pictures

At left, Brad Bittorf in the Descanso Gardens; Above, Carla with her mother, Reva; Below, right, Descanso Garden Lilacs; Below, Desert garden, The Huntington. Photos by Bill Horman.

Above left, John Carvill, left, and Woody Barnes; Lower left, walking through the Huntington Desert Garden; Below, right, Sally Schenker, left, and President Bob Hoepfl; Below, Japanese Garden, The Huntington. Photos by Bill Horman.

On the Scent of Designer Blooms

A rose by any other name would smell as sweet. That sentiment might have been true in Shakespeare's time but today, alas, some modern roses have lost their scent altogether and a scientific effort has been launched to understand why.

Researchers know why all roses used to smell good (to insects, at least): lacking locomotion, these and other flowers developed petals with sweet, spicy, citrus and intoxicating scents to help lure species with the means of transport – notably wings – to spread their pollen.

Today, however, Shakespeare's insight no longer holds true for many roses, which have a soulless beauty compared with a heavily scented damask. "Selective breeding has reduced flower scent to almost nothing," said Dr. Natalia Dudareva of Purdue University, Indiana, one of a handful of scientists worldwide who are studying floral scent. "Flowers are bred for colour, size and shelf life without any attention to scent," she said. "Floral scent disappeared, and nobody knows why."

Roses are not the only flowers to be diminished this way. Chrysanthemums, lilacs and carnations are among a host of modern cultivars whose scents do not match their looks. That, however, may be about to change thanks to advances in the understanding of the genetics and biochemistry of petals. For millennia, people have prized the smell of roses. In Homer's Illiad, Aphrodite anointed the slain Hector with rose oil, marking a long association between things that smelt good and curative powers. For hundreds of years, people have extracted essential oils – the volatile fragrance molecules – using techniques such as enfleurage (a tedious technique that relied on tallow), steam distillation or vacuum evaporation, a relatively modern method that allows oils to be extracted without damaging them with heat. Yet as recently as a decade ago, Professor Eran Pichersky of the University of Michigan, Ann Arbor, realized that scientists did not have a clue about how plants manufacture the small, volatile organic molecules that were so highly prized by the perfume industry.

To find out, his team set up a pioneering project to study Brewer's clarkia (Clarkia Breweri), a Californian annual wildflower with a sweet scent and lavender-hued blossoms and found that its fragrance was the result of a dozen or so volatile chemicals.

Scientists now know that an orchid can produce about 100 different volatile compounds, while a snapdragon produces between seven and ten. Although much has been done to analyze the composition of scent, they are only now beginning to discover the genes that encode the enzymes that make the compounds, and how these volatile compounds are released by petals. Prof. Pichersky's team accomplished

a floral first in this respect: it found linalool synthase, an enzyme that helps form a linalool, a common scent volatile in flowers and the gene that holds the enzyme's recipe. Since then, the scientists have discovered three more floral scent enzymes and their corresponding genes in Brewer's clarkia, including salicylic acid carboxyl methyl transferase, which produces methyl salicylate, a volatile with the scent of oil of wintergreen.

Working on the snapdragon (Antirrhinum majus), Dr. Dudareva has discovered that both the moth-pollinated clarkia and the bee-pollinated snapdragon produce floral scents using very similar biochemical pathways. It seems that most of the scents created by flowers could be variations on a few biochemical themes.

For example, the snapdragon researchers discovered the enzyme benzoic acid carboxyl methyl trasferase, which helps form methyl benzoate, a major scent chemical that wafts off its petals. This enzyme is very similar to the clarkia's salicylic acid carboxyl methyl transferase, and indeed the structure of methyl benzoate is similar to the structure of methyl salicate, though they smell different.

Given the presumed role of methyl benzoate in the snapdragon flowers, it was striking that this scent is restricted to the areas of petals that come in contact with pollinators. Dr. Dudareva even found that the scent's function was reflected in the way it was released during the day: in snapdragrons, flowers release four times as much methyl benzoate during daytime - prime pollinating time for bees - than at night. By contrast, petunias and flowering tobacco release maximum menthyl benzoate at night, when moths are most likely to visit.

Like many flowers, snapdragons also damp down scent shortly after pollination - a strategy that might steer insects toward unpollinated blossoms. Dr. Dudareva's team even thinks it knows why: it has found a gene that might trigger a slump in scent, which could provide clues to its disappearance in some modern varieties.

To lay bare all the secrets of floral scent, a systematic effort is under way to study the rose. Dr. David Weiss, a plant biologist at the Hebrew University of Jerusalem, is the head of the Petal Genomics project - a three-year-old effort to build a datebase of DNA and then identify scent genes.

To do so, Dr. Weiss and his colleagues, including Prof. Pichersky, are rummaging around the DNA of rose petals. For the study, they selected Fragrant Cloud, a strongly scented red rose, and Golden Gate, an almost odorless yellow variety. They have found more than 3,000 genes that are active in the petals and have focused on those that are active during scent production.

This way, they have found at least 15 candidate fragrance genes. By putting these into bacteria, the resulting GM bacteria can help reveal the role each gene plays in scent production. Already the team has found four enzymes that help make

common scent components - two forms of 3,5-dimethoxytoluene, sesquiterpene and geranyl acetate.

Dr. Weiss told the journal **Science** that he now hopes to spice up floriculture by using GM to create more fragrant roses. "The ornamental flower industry in Israel is an important aspect of agriculture, partly because we export cut flowers to Europe during their cold, dark winters," said Dr. Weiss, whose family owns a flower business. "I'd like to see if we can bring scent back."

Such efforts have already started. Last year, in the **Plant Journal,** Dutch scientists reported creating GM petunias with the linalool synthase gene found in Brewer 's clarkia. Although the GM petunias made linalool in many tissues, they did not release the scent. Dr. Weiss's lab recently had more success putting the same gene into carnations, which did release linalool but not at levels to make much difference.

The work has also thrown up an alternative route to boost fragrance. In a study to be published next month in **Molecular Breeding,** Professor Alexander Vainstein and Dr. Weiss's team enhanced scent in orange carnations by blocking pigment production in its flowers. Because some colour and scent chemicals begin in the same biochemical pathway, the team reasoned - correctly - that blocking colour diverts the plant's metabolic resources towards making scent in the resulting cream-coloured flowers.

Researchers might even return carnations to their former glory. At one time, the flowers had the fragrant smell of cloves and spice - the volatile chemical eugenol - which is only a trace ingredient of today's cultivars. These new insights might even allow scientists to create stronger scents, designer fragrances (Gucci flowers?) or even to make flowers that produce scents at certain times of the day: most people prefer moth-pollinated flowers, which they consider "sweet-smelling", but many such flowers produce scents only at night.

But will the public accept the idea of GM roses spiked with scent? Despite the controversy over genetically modified foods and crops, Pref. Pichersky claims that it can and will happen.

The Daily Telegraph (London)

Breeding Low Growing Lilacs

The common lilac, *Syringa vulgaris* L. is a tall shrub, to twenty feet (7 m) in height, native to southeastern Europe, and is hardy in North America at least to Zone 4, (Hortus III). For west Europeans, lilac was first recorded growing in Istanbul, where the summers are hot and humid, and the winters are moderated by the Mediterranean climate. While lilacs traditionally grow well in northeastern and midwestern states, many lilacs are adapted to conditions in southern and central California. A cultivar that performs well in Riverside, 'Excel' , was selected in Manitoba, Canada, in Hardiness Zone 3.

Most lilac seeds are open pollinated, like corn, and flowers protected from visiting honeybees and other insects rarely set viable seed. In other words, most lilac seedlings are hybrids between two different parents, and it is difficult to obtain pure lines of selfed seed. That is why a desirable plant is vegetatively propagated by suckers or cuttings, Methods to hybridize lilacs were published recently by Robert Hoepfl, 2001 (**Lilacs**, Vol. 30 No. 3) and by Owen Rogers, 2000 (p. 257 - 269 in Callaway D.J. and M.B. Callaway. **Breeding Ornamental Plants**. Timber Press). Sowing open pollinated lilac seed produces a population of plants, that when they mature and flower, are all different. One character that is variable among lilac seedlings is height. Nine-month-old plants, that received the same water and fertilizer treatment can be from one to twenty-four inches (2.4 to 58 cm) tall. Other plants were either taller, up to six to eight feet (2.0 to 2.5 m) or had poor bloom structure. I asked Louis, "If you obtained one low-growing plant with good blooms out of twenty seeds, what could you find from sowing hundreds of seeds?"

In September 1996, I collected all the seeds I could from the 'Pocahontas' shrub growing in the Botanic Gardens. Adjacent lilacs that could have acted as pollen parents included, 'Excel', 'Lilac Lady', 'Angel White', 'Matthew's Purple', 'Gertrude Leslie', 'Mount Baker', 'Blue Skies', 'Descanso King', 'General Sherman', 'Purple Heart', 'De. Miribel', 'Oliver de Serres', and 'Cheyenne'. All of these named lilacs flower well at Riverside, in southern California. Around 600 seeds were sown in September 1996, and seedlings began to emerge about 30 days later. Emergence continued over several months. Seedlings were potted on starting in late fall 1996 and over-wintered in an unheated glasshouse. Seedlings grew at varying rates during spring and summer 1997. Of the 570 seedlings that remained in winter 1998, the tallest 75%, plants from two to four feet (0.6 - 1.3 m) high, were discarded, and the 142 plants, less than two feet, were planted on the Experiment Station in March 1998.

Provided there is adequate weekly irrigation water, lilacs at Riverside like full sun. Unlike the lilac specialist at Descanso Gardens in Los Angeles, which is closer to the humid coast, we do not recommend withholding water in September and October to induce onset of winter dormancy. During Fall months, hot, dry Santa

Ana winds can blow out of the Mojave Desert, and any plant in dry soil will soon desiccate and branches may die. We do not reduce weekly irrigation until the leaves are shed in November. At Riverside, no lilacs have difficulty entering dormancy. However, there are some that during late summer, fall and early winter will put out small round clusters of flowers, which are definitely inferior in size and shape to the large blooms put out by the same plant in spring. Plants of *Syringa oblata*, from China, often have these small fall blooms, as do some *S.* x *hyacinthiflora* cultivars with *S. oblata* in their parentage. Some lilac plants do not receive a sufficient number of hours of winter cold, and they leaf out and flower poorly the following spring.

The Pocahontas seedlings planted on the Experiment Station began to flower in spring 2000. Most that did were nothing to write home about. However, in spring 2001, I realized that I should discount the first year's flowers, for some of the plants and blooms now showed promise. Some plants that bloomed heavily in spring 2001 had few flowers in spring 2002, perhaps showing biennial bearing. Others bloomed well in both years, which suggests that the tendency to biennial bear is genetically determined. Most plants varied in height from three to four feet (1 - 1.3 m), a few were shorter or taller. The plants grew well and they are beginning to sucker. We will take notes on when leaves emerge and when a plant begins to bloom. Most are in March, but a few are earlier, and some are delayed until mid May. The length of bloom is recorded, normally two to four weeks, a few even longer. Flower bud color, open flower color and the color of the scenscing flower are important characters. The size and shape of the petals and of the flower are noted, as well as the size and position of the inflorescence on the bush.

Lilac is a plant that can have wonderfully colored flowers for one month of the year, but for the other eleven months it provides only background green or brown. There is variation in foliage color. Plants with deep purple flowers often have purple-green leaves in spring. Plants with white flowers usually have bright green leaves. A few plants have leaves that in fall turn yellow or reddish brown. Leaf shape and size can differ greatly. It is desirable to have a plant that has attractive foliage as well as short stature, good bloom size and shape, bright flower colors and of course a scent that reminds one of mother or grandmother and great aunts. We will observe these short-stature plants for several more years before final selections are made for further testing in climates with warm winters.

A second kind of lilac that performs well in Riverside is 'Rutilant' that was released by Lemoine in 1931. It belongs to the Nanceiana group, and is sometimes called *S.* x *henryi* 'Rutilant'. The parents of this group are listed as *S. josikaea*, also from eastern Europe and *S. villosa*, also from China. 'Rutilant,' with long, tubular, single, purple flowers, begins blooming the last week of May and continues into early June, depending on the weather. It is the last lilac cultivar to flower in Riverside. As you can see, there are quite a few lilacs that will flower well in Southern California, and presumably in other southern climates with warm winters. While most of them are of standard height, it may not be too difficult to select ones that have reduced stature for modern urban gardens.

J. Giles Waines
Botanic Gardens, University of California, Riverside, CA 92521-0124 USA

TIPS FOR BEGINNERS

Question: Can I use mulch around my lilacs?

Answer: *The answer this month is supplied by ILS member Richard Poffenbaugh of 1621 Park Avenue West, Mansfield OH 44906. He is a retired biology teacher and active home gardener since 1960. He is a member of the Mansfield Men's Garden Club and was editor of the club newsletter for 21 years.*

MUCH ABOUT MULCH

By mid July, mulching of plants has been in full swing. Many gardeners are reminded about mulching as soon as tall stacks of bagged mulch appear at gas stations in March.

Many types of organic mulches are applied to gardens and landscapes. Shredded or chipped materials are applied around trees, shrubs, and flower gardens. It's rare to observe a well-tended home landscape without mulched plantings.

Vegetable gardens are mulched more likely with less costly materials. Seldom have I seen vegetable plants mulched with pine bark. Common mulches may include newspaper covered with grass clippings, wood chips, shredded leaves or straw.

Like other gardening and landscaping topics, there is much to know and learn about mulches. Today's column shares a few tips about mulching.

An organic mulch layer around a plant is not a human creation. The accumulation of fallen leaves becomes a natural mulch layer in a forest. This layer of organic materials, microorganisms and invertebrate life provides a natural source of nutrients. This source supplements the food-making process (Photosynthesis) of green leaves. Trees in a forest remain healthy without fertilizer because of the natural recycled supply of organic matter.

Unfortunately, some folks believe if a little mulch is good, more is better: Wrong. Sometimes mulch is applied to a depth of six inches or more, a likely scenario if more is applied each year - if needed or not.

A deep mulch layer (over four inches) holds water in the soil and keeps air from reaching roots. This contributes to plant stress which may result in root tissue rot. The longer roots are in poor health, the greater the chance for death of a plant. A plant under mulch stress shows poor leaf color and probably some twig and branch dieback.

For some gardeners, price and appearance are what matters in the purchase of mulch. While cost is important, the cheapest mulch may not be the best bargain. It may decompose more quickly and require constant renewal. Or it may detract

from the landscape beauty (large, shredded wood pieces) and defeat the purpose of beautification.

A mulch forms a protective barrier between the environment and the root zone below. Healthy, vigorous roots make for a healthier, more productive plant. Over time, the lower mulch region gradually decomposes, thus improving soil structure and fertility.

An effective mulch lets water soak in gradually and resists erosion by wind and water. If used properly, mulch helps to conserve moisture, suppress weeds, moderate soil temperature and create a favorable environment for plant life.

For flower gardens and landscaping, I prefer a mulch with a natural appearance and a longevity of at least two years. Other important qualities include a loose, airy structure and resistance to crusting or packing. Shredded hardwood bark, pine bark and pine needles are among my preferred organic mulches. Hardwood bark is attractive and often used by landscapers.

Pine bark has a rich brown color and good longevity. Small pieces are easy to apply around plantings. Pine needles create a superior mulch, but are difficult to purchase in the north. They are plentiful in the south. It's painful to see piles of needles in the fall along the curb to be picked up by leaf collectors. What a waste of precious mulch material. Pine needles are slightly acid. They are ideal for rhododendrons, small fruits and most landscape plants. They are light, airy, decompose slowly and long lasting. The best sources of pine needles in the north is from a large, established pine windbreak. Underneath there will be a thick layer of needles.

Wood chips are inexpensive and widely available. It's what I call an "all-purpose" mulch. Attractiveness depends on size of chips, smaller the better. Chips should be aged for three months or more to allow acid compounds to dissipate. Widely used for large shade trees, some vegetable plantings and garden pathways. Avoid large, shredded pieces.

Cypress mulch is sold throughout Ohio. It is derived from mills in the southeast. The tree grows mainly in Florida and Louisiana. It is resistant to rot and decay. Sometimes a whole tree is ground up and marketed as bark mulch. Cypress mulch is graded on the amount of wood content. Grades range from A (best, least amount of wood) to C (most wood plus some sawdust).

Mulching Wisdom:

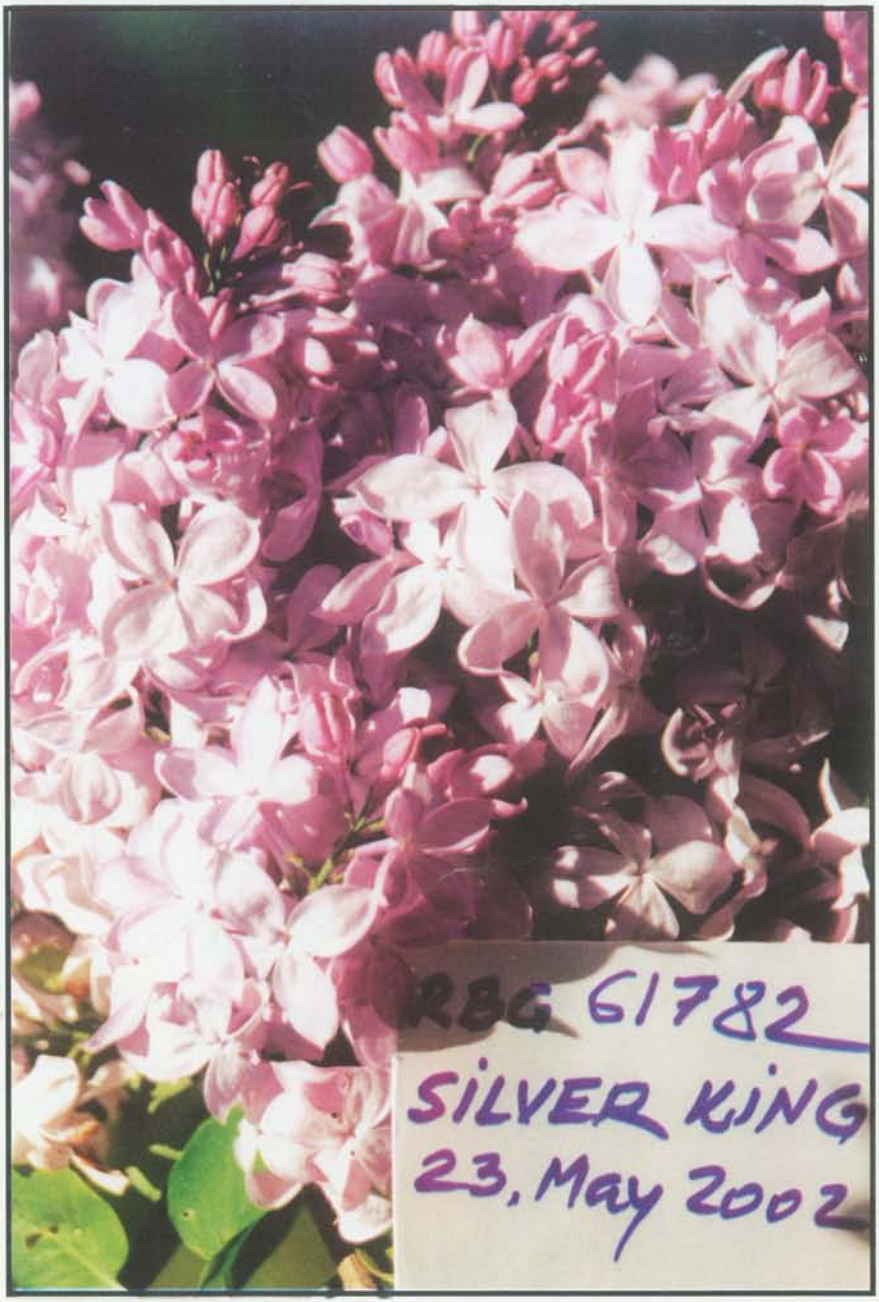
Before applying mulch, weed the area and water soil if dry. Established weeds will work their way through mulch.

Keep mulch at least four inches away from woody stems. Rodents use mulch as shelter and may girdle the trunk which kills the tree or shrub.

Mulch doesn't have to be applied each year to established beds. Fluff up the old mulch and it may serve well for another growing season.

'Sensation' with excellent demonstration of reversion sport. Fully purple, fully cream-white, and classic 'Sensation' form in same pannicle. Plant is on the grounds of Mackinac Island Town Crier newspaper. Photo by Bradley Bittorf.

Eagle statue overlooking the St. Lawrence. See details with "Cap-à-l'Aigle." Photo by Caroline Dion.


RBG 61782
SILVER KING
23, May 2002