International Lilac Society, Inc.

PROCEEDINGS

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John L. Fiala, Editor

IN THIS ISSUE

FRONT COVER: Top left: Early hybrid 'Turgot'; top right: Dr. Roberrt **Clark** leads Sunday tour through Eastman-Durand Park- left to right, Dr. W.Cumming, Orville Steward, S.H. Baker, Lois Utley, Dr. Don Egulf, Dr. Robert Clark, Mrs.Stanley Rowe, Mrs. Lourene Wishart, C.E.Short, Ellen Steward, Dennis Brown and Fred Van Orden. Center: Dr. Don Egulf points out s. chinensis 'Orchid Beauty' to Wm. Utley, Clare Short and Dr. Rodgers. Lower left: Dr. Owen Rodgers conducts Hybridizing Tour and lower right: Mrs. Gertrude Wister and Walter Oakes discuss lilac pruning effects.

The President's Message-

Greetings!

When on last May 20, an unexpected series of events seemed to necessitate recalling an old fire-horse to put on the narness again, I, who had thought to stand aside from the onward push of the International Lilac Society, Inc., took over the president's job from Orville Steward. My first word in this office should be indeed one of thanks to Mr. Steward for his good works in the preparatory organization that culminated in the great interest expressed by the large attendance at the first annual convention in Rochester, New York.

The future seems bright for lilacs when one looks at the list of lilac research projects outlined in the Convention issue of the I.L.S. NEWSLETTER. The more so when at the Rochester meeting there was personal word of work in progress at the University of New Hampshire, the National Arboretum and many other public and private collectors of lilacs pursuing these same ends.

With the resourceful and hard-working editor that we have in Father John Fiala, the NEWSLETTER will inevitably become the stable element in the Society that will weld a global lilac group into a strong organization. I am happy to have the continuing cooperation of Walter Oakes as secretary and Fred Van Orden as treasurer. Also, it was felt that the Society needed to keep Bob Clark's hand on the wheel and he will contonue to help steer its course as Executive Vice-President.

Bernard Harkness
President of I.L.S.

Bernard Harkness, President and Board Chairman I.L.S. 1972-1973

REPORT OF FIRST ANNUAL CONVENTION OF THE INTERNATIONAL LILAC SOCIETY INC.

ROCHESTER, N. Y., MAY 19-21, 1972

To the President and Board of Directors:

Sixty-six members attended the First Annual Convention of the International Lilac Society Inc. held at the Flagship-Rochester Hotel, Rochester, N. Y., from May 19-21, 1972.

Registration receipts were $623.00 plus $300 contingency advancement. Expenses were $835.23. (Itemized attachment presented.) Balance on deposit $87.77.

Aside from minor annoyances the programs, speakers, tours, luncheon and banquet were well received by delegates and guests. The banquet speaker graciously relinquished his time to entertainment and awards, and annoying delays developed before the business meeting was called to order, also the Sunday tour of Monroe County Parks was delayed owing to communications failures.

Weather delayed opening of "French Hybrid" lilacs at Highland Park but members found certain early blooming cultivars, notably "Hallelujah" worthy of attention. The date being set a year in advance the median date of 66 years standing was selected. The Committee recognized the fact of Memorial Day falling on the succeeding weekend. (Perhaps in another year this factor should not be weighted so heavily?)

Flagship-Rochester Hotel provided several facilities and services gratis: meeting rooms, registration space, tables and courtesy bus to and from Highland Park on Saturday, airport transportation as well as other courtesies.

Speakers were requested to submit copies of their talks to the Editor for publication in the "PROCEEDINGS". The roster of delegates might also be appended as a record of Charter members.

Providentially the dates dovetailed with the Arnold Arboretum's centennial, therefore several conferees were able to attend — notably Mr. Peter J. Green of Kew, Dr. Claude Weber of Geneva and Dr. William Cumming of Morden, Manitoba. Dr. A. Gromov of Moscow sent regrets by post that he could not attend.

Except for the failure of actually unveiling six "Rochester" seedlings owing to the delayed Spring, delegates and guests were pleased with the meeting. One of the chief benefits of conferences is fellowship. This first Convention was indeed memorable.

Respectfully submitted,

Robert B. Clark for the Committee, Chairman
Alvan R. Grant
Mrs. George Wynkoop
Richard A. Fenicchia
Mr. and Mrs. William Utley

AWARDS OF THE INTERNATIONAL LILAC SOCIETY INC.

Presented at the First Annual Convention May 20, 1972, Rochester, N.Y.

DR. JOHN C. WISTER

The Highest Award of the Society—

'HONOR AND ACHIEVEMENT AWARD' *was presented to DR. JOHN C. WISTER*
"For your inspiration, dedication and guidance in the founding of the Society and your scholarly work with the Lilac Surveys."
(presented by President of the Society and Board—Bernard Harkness)

The Society's Scientific-Horticultural Award—
'THE DIRECTORS' AWARD' *was presented-to RICHARD A. FENICCHIA*
"For outstanding work in hybridizing the Lilac and producing the new 'ROCHESTER STRAIN' "
(Presented by Chairman of Research and Board Member, Fr. John L. Fiala)

The Society's Arboretum, Public/Private Garden Award—
'THE PRESIDENT'S AWARD' *was presented to the MONROE COUNTY PARKS DEPARTMENT AND HIGHLAND PARK*
"For outstanding work in planting, public education and park landscape, making the Lilac an outstanding national attraction in Rochester, N.Y." Accepted by Parks Director, Alvan R. Grant on behalf of the Parks Dept.
(Presented by founding President and Board Member, Orville M. Steward)

The Society's Award for Outstanding Work or Special Service—
'THE AWARD OF MERIT' (six special awards were presented)
to MINERVA CASTLE "for outstanding work in hybridizing lilacs and introducing better varieties."
(Presented by Charles Holetich-Eastern Canada Vice-Pres. and Board Member)
to ROBERT B. CLARK "for outstanding work in promoting the Lilac and the Society and Founding the first Local Chapter."
(Presented by Board Secretary, Walter W. Oakes)
to DR. WILLIAM A. CUMMING "for outstanding work in promoting and introducing better forms of lilacs."
(Presented by Board Member and Editor, Fr. John L. Fiala)
to MARK O. EATON "for outstanding, lifetime work with and dedication in promoting and introducing finer lilacs."
(Presented by Board Member Franklin J. Niedz)
to ALVAN R. GRANT "for outstanding work in promoting the Lilac and as originator of the 'Rochester' lilac."
(Presented by Board Member, Founding Pres. Orville M. Steward)
to LOURENE WISHART "for outstanding work in promoting the Society and the Lilac."
(Presented by Board Member, Rec. Sec., Lois Utley)

SPECIAL COMMENDATION was given to J. Herbert Alexander of Middleboro, Mass. for his work with lilacs and propagation of better forms.

SPECIAL GRATITUDE AND THANKS were extended to Founding President Orville M. Steward at the close of his term of office.

THE FIRST CONVENTION, A RECOLLECTION

by Robert B. Clark; Executive Vice-President I.L.S.

Annual gatherings of plant societies mean different things to individual members—a new garden or another visit to a well known garden, the first meeting of longtime correspondents, discussions by experts, showing of new plants or flowers, etc. For the International Lilac Society the Rochester meeting presented many expectations because it was an inaugural affair with many promises made for which no precedents existed.

Who, for instance, are the lilac "brass" and how do they operate were big questions in most member's minds. Highland Park's fame and a good many lilacs were known quantities. The program of speakers, the condition of the lilacs, and who would attend constituted adventures for sixty-six members. The general impression (so far as this reporter could determine) is that overall it was indeed a worthwhile convention in spite of certain on-the-spot annoyances: (1) no lavish display of blooms because the arrangements committee failed to forecast Rochester's weather precisely enough; (2) registration procedures could have been improved; (3) buses should have departed on schedule; (4) meetings should start **on time**, and so on and on.

A week prior to the momentous gathering it became clear that the gradual spring was being altogether too casual. A frantic appeal went out to Cleveland, Swarthmore and Long Island: please bring arms full of cut lilacs! We were indebted to Fr. Fiala and Clare Short, to the Wisters and Dave Melrose, to the Stewards and Fred Van Orden for the marvelous displays on the registration tables.

To open the histroic conclave Dr. John C. Wister, who had suffered a fall a few weeks earlier, read from a wheelchair a prepared statement looking definitely to the future. Drawing from his extensive experience over the past half century, he charted the goals toward which ILS might profitably aim and warned of certain pitfalls to avoid. Tone of the message was both challenging and confident that ILS has in prospect a great future.

Dr. Owen M. Rogers of Durham, New Hampshire, brought a glowing report illustrated by Kodachromes of the progress of lilac breeding at the University of New Hampshire. Fortunately the Durham campus was well planted to lilacs in the early days, the common lilac being the state flower of New Hampshire. Working with late flowering species lilacs, the New Hampshire breeders are bringing forth an exceptional race of hardy lilacs in a good range of color.

Dr. Randolph Pike, having just returned from a collecting trip to Yugoslavia, spoke about his experiences gathering pollen from native lilacs. Since the common lilac has been in cultivation for centuries, certain genes have been bred out. By collecting wild material it is possible to reintroduce some of these lost characters back into garden lilacs.

Dr. Morris T. Vittum of the New York Agricultural Experiment Station at Geneva told of his phenological project using 'Red Rothmagensis' lilac to indicate springtime progress throughout New York state. He spoke of the national scope of the project and asked for new cooperators to tighten the network in order to pinpoint data with greater detail.

Anchor-man for the afternoon program was our editor, Fr. Fiala, who spoke of the exciting possibilities just over the horizon in lilac improvement. He described his work with lilacs, crab apples and daylilies, telling of results he is getting using tetraploid plants. We look forward to seeing his new work when ILS meets in Cleveland.

(continued on page 37)

THE LILAC IN CULTIVATION

by Dr. John C. Wister, Emeritus
Swarthmore College, Swarthmore, Pennsylvania

Mr. Chairman: —

I salute you.

I salute the others—officers, committee members and plain hard workers, who have made possible this meeting here today.

You have done a splendid job, not only during this past year, but, in some cases, long years before the Long Island Organization Meeting.

You have brought together, people who have long loved and grown Lilacs, but who perhaps, did not know each other, or who, at least, had not previously worked together. Some of them had, for years, vaguely hoped that some day there might be a special society to do for the Lilac what other societies they had belonged to, or heard about—special societies for the Rose, Peony, Iris, Daffodil, Hemerocallis, and dozens of others—had done for their special flower.

Each of these, like our Society today, started with a few dedicated people. They did a lot of hard work, over a period of years, just to get going, just as you have done. And over the years, most of the societies I have belonged to, or known about, have grown—some of these only a little, others a great deal. Whether now small or large, every one of them, that I can think of, has accomplished a great deal for its special plant, and have helped to make American horticulture great.

Like our Society each of these older societies started because they were needed. The organizers had had trouble trying to learn about their special plant —how to grow it, where to see the best varieties well grown, or where to buy these varieties true to name.

In each case the organizers quickly found that there were many other people interested in their special plant. Sometimes these people were almost next door. Sometimes they were across the continent or abroad. Most of them knew very little; yet always individuals with great knowledge seemed to turn up to lead the way. Occasionally this led to botanical research, or the study of genetics. More often the new leaders showed beginners how and when to make cuttings; how to prepare the soil, plant and prune; how to ward off injurous insects or diseases; where to buy well grown plants true to name; and how to plant Lilacs effectively to make pleasant home surroundings.

I don't know how rapidly this new Lilac Society will grow in numbers compared to the other societies and I don't think it matters very much. What I am sure of, is that it is going to take its place prominently among other special plant societies in the good work it does. First, the Society will make the Lilac more widely known and grown in private gardens for the enjoyment of the owners. Second, the Society must make the Lilac more grown and displayed in public garden collections right across the northern half of the continent so that the general public can come to see the flowers and enjoy them. And then, by creating a demand for more plants of fine species and varieties the Society must show nurseries that it can become profitable to grow good Lilacs in quanity. This will mean, in turn that the Society must teach its members, and the general public, to be willing to pay higher prices for properly grown, true to name, plants instead of seeking supposed bargains at chain or discount stores.

That is a good start yet only a small beginning.

We are honored to have many expert Lilac growers here today. But they will be the first to tell us that they don't know it all, and that we need research

of every kind. We should encourage this and get it going just as other societies have.

In Europe, for over a century, and on this continent for well over half a century, individuals—amateur and professional—have sown seeds and have produced and introduced superior new varieties. Some of these people, we don't know just how many, have made crosses between existing varieties, or controlled and protected hybridization between different species. The result is that today, in addition to the 20 or more known wild species we have record of some 1200 varieties (cultivars). We know where over half of these are being grown. We need to learn which varieties of the other half actually still exist and where, before we can arbitrarily say we have the authority to declare them obsolete.

In one sense, the number of different Lilacs varieties grown in public and private gardens is too large and has increased greatly in recent years. The number being grown in nurseries, on the other hand, is much smaller and has been declining. Nurseries offer far too few of the finest kinds and hardly any of those introduced in the past ten or twenty or even thirty years.

The total number of 1200 varieties we have learned about is small if we look at it in comparison to the varieties of Iris, Roses or Rhododendrons. These genera all have more species from more widely scattered areas and they therefore probably present more opportunity for still more variation from breeding. While our future possibilities thus may be smaller or more limited than the possibilities of some of these other genera, that is nothing to worry about. There is still enough possible variation and improvement ahead to occupy the time of all the geneticists and breeders that we can gather together in the next century! Certainly the real breeders of the past and of the present have only just scratched the surface of what may be accomplished in the future, by the new breeders that this society must, and is going to, encourage.

This is getting far beyond our first Annual Meeting here in Rochester. We have chosen Rochester because we want to see and have a chance to really study the magnificent Highland Park Lilac Collection established over 80 years ago. We don't know how many other public or private collections received their inspiration in Rochester. We can, however, easily see how important a Lilac display collection can be to any park. As far as I know the only collections of similar size and scope are at the century old Arnold Arboretum which was started in the mid or late 1880's, at the great experiment station of the Canadian government in Ottawa which was started in 1889. Each of these three public gardens now have a partically complete collection of the species of the genus Syringa plus five or six hundred varieties (cultivars).

Apparently no other collection, approaches these three in size. After all it is not necessary, or in my opinion even desirable, that other communities should attempt to equal or surpass them. There are not really that many kinds of Lilacs that are first-class garden plants and really distinct from each other. But these three great collections do present a useful history of the progress of a century and a half, if we accept as the first important garden break the arrival of the first double 'Azurea Plena' (of Liberti).

It is also important that the oldest kinds be saved for the study of and use of geneticists and plant breeders. Some may carry important genes that have been lost in further development.

This Society must and will develop the knowledge to be able to point out the best of the present 600 varieties and such new ones as may be offered by the breeders. These best whether they number 200 or 300 (certainly not more) should be recommended to and made available to the collector whether public, private or commercial.

I have no statistics to show in what order other collections inspired by Rochester, Arnold, and Ottawa came into being after the turn of the century. But in 1941, the first survey of the American Association of Botanical Gardens and Arboretums recorded a dozen very good public ones plus another dozen of commercial and private ones. You will find them listed in the original edition of "Lilacs of America" with information where they could then have been seen or purchased.

Three more public collections were reported in the 1953 edition of "Lilacs for America" but as many commercial collections. Today the new 1972 compilation by Father Fiala shows that the public collections increased to over thirty. That shows great progress, but please don't let it make you feel too complacent. Only one third of these have what could be described as an adequate number of varieties with the quality of the varieties hardly more than so-so. Old and rather second-rate varieties predominate. The number of standard high quality varieties that originated between the two world wars and which were on the Recommended List of the 1941 and 1953 "Lilacs for America" is not adequate let alone any sampling of varieties introduced after the Second War. And the number of private collections has been cut by half which is a bad sign.

Finally the number of nurseries offering the varieties, that you and I would really want, was not only cut in half from 60 to 30 but only a third of them offered over fifty varieties. Add these facts to others mentioned before and you find still more reason why we need a Lilac Society, why it was formed and why we are here today.

But let me go back again to discuss the background of the genus Syringa which gives us the species from which our present day varieties have sprung and from which (barring future discoveries of really new or different species, which seems rather unlikely) the future offers great possibilities of progress even though it may be limited.

The species all come from the mountain regions of Europe and distant Asia, climates that are not too unlike the gardening areas of the northern half of the American continent. But within their climates there are differences of latitude and elevation which may influence, not only how far north the Lilac can be the mainstay of the hardy shrub border, but also how far south it can succeed. Most of the present day kinds require an adequate number of winter days below 40 degrees to break dormancy in the Spring. The great plant breeder Walter Lammerts has already shown the way to produce varieties for Southern California by using descendents of Syringa lacinata crossed with S. vulgaris. At the other extreme the late Frank L. Skinner produced, by using S. Oblata dilatata with S. Vulgaris, varieties hardy as far north as the Beaverlodge Alberta Experiment Station where at 50 degrees or 60 degrees below zero our best known vulgaris varieties would not survive or at least not grow well.

Most of us do not need to worry about hardiness (which is a relief to those who are interested also in Rhododendrons, Flowering Cherries and Peaches) and who must consider hardiness with every cross. Yet back in 1961, Fred Lape, at the Landis Arboretum near Albany reported that when the thermometer dropped to 29 below zero many of our favorite kinds showed injury to the flower spikes, when, what he called "The Old Common Lilac" did not. He further reported that the pink varieties 'Macrostachya' and 'Lucie Baltet' had winter killed when others had not.

Our Society members in their different climatic areas should observe and report on the behavior of varieties. If some kinds do consistently get hurt in bad winters this should be plainly stated so that nurseries can be warned not to ship them into those areas and so that the plant breeders, except, in milder climates, will not waste time using them.

Note should also be taken in many different places on the presence of or adsence of injury on plants or flowers from diseases and insects,and, alas in this day and age, from air pollution. Already we know that mildew is worse in certain climates and on certain varieties, than in other climates on other varieties.

Not much attention has been given to this because it seems comparatively trivial. Nothing is too trivial. Each virtue or fault is not isolated but is part of the whole nature of the plants and of what characteristics it has inherited from what parents and grandparents.

Mildew may be comparatively trivial. The blight in the Pacific Northwest which has wakened the interest of Dr. Charles J. Gould, of the Puyalup Experiment Station certainly isn't trivial. It has practically eliminated the planting of Lilacs in great areas. As yet, little is known about it or its causes. But Dr. Gould has already published guidelines giving the list of varieties showing the greatest injury, and also those which have, at least, shown partial resistance.

In the East, Dr. Russell Seibert, at Longwood Gardens, has already written about foliage injury from air pollution. Dr. Craig R. Hibben, of the Brooklyn Botanical Gardens, has already published reports of varieties badly injured in Brooklyn, but free from injury some forty miles away in West Chester County. I have heard that S. dilatata and some of its hybrids have not shown injury.

It is good that there are now over 30 public collections which give visitors a chance to see kinds new to them. It is at least a good start. The Society can call to the attention of officials or other city and county parks and of several dozen agricultural stations that a collection of 100 or even 50 first-class varieties of Lilacs will bring them public attention and approbation well beyond any comparable collection of any other plants that they could put in and maintain at any comparable cost.

Think just a minute of the many public rose gardens and of the cost of the far greater number of plants needed in the beginning; of the needed special soil preparation; of summer maintenance with the inevitable spraying; of winter protection; and of the inevitable replacement costs. Rose gardens of course, bring civic pride and good will but so will Lilac Gardens at a lower cost, particularily in the cold climates where Lilacs reign supreme.

I have emphasized that we should try to do for Lilacs what other plant societies have done for their special plants. I wonder if many of you realize how many "special plant societies" there are and how much they have done in the last half century. According to the new directory of the American Horticultural Society there are about 50 societies devoted to a special plant or group of plants. Half a dozen of them, like ourselves, call themselves "International." Most of the others use the name "American," or "of America," or "North American" or "National." Yet almost every one of them is international in scope, in outlook and in membership.

We are the newest of this group of fifty and are just beginning our new career. We don't know how, in five or ten years, we may compare with the others in membership or in achievement, or how much we will have made the Lilac popular where it is now little known or appreciated.

These other societies vary in memberships from 100 or less to many thousand. The largest in this country, I believe, is about 15,000 members. If you think that is big, think of the British "Royal National Rose Society" (a special plant society) with over 100,000 members. England, of course, is a land of gardeners and the smaller size of rosebushes makes it possible to grow them in countless gardens which would not have room for Lilacs. It is no accident that one of the largest societies in this country is devoted to the African Violet which can be grown on a window ledge; and that the Societies for Daffodils, Iris Hemorcallis and Rock Plants are larger than the Societies for Rhododendrons and Magnolias.

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Left: typical,picturesque twisting of century old vulgaris trunk.Center: Dr. Owen Rodgers points out s.patula to group. Right: s. Meyeri in bud.

LILACS TODAY

by Dr. Owen M. Rodgers,
University of New Hampshire, Durham, N. H.

Among the seed plants, in the order of the Gentianales* sets the family Oleaceae distinguished by its 2's: Typically 2-merous flowers; 2 anthers with cells back to back; 2-loculed superior ovary, generally with 2 ovules per locule.

It is a family of economic, historic and aesthetic importance. Most treatments separate three genera (Jasminum, Mendora and Nyctanthes) into the subfamily Jasminoideae while keeping all the other twenty or so genera in the subfamily Oleoideae including the olive (Olea), the ash (Fraxinus), fringe tree (Chionanthus), fragrant olive (Osmanthus), privet (Ligustrum), golden bells (Forsythia) and the Lilac (Syringa).

While the "2's" hold the family together, there are serious questions as to whether the whole assemblage is a natural evolutionary grouping. Should Fraxinus be included in the family at all? Maybe privet is closer to Buddleia in the Loganiaceae? This report will not attempt to discuss the ordinal position of the family or its inclusions. Suffice it here to mention the problem as the first of several areas needing further work that have to be recorded in any consideration of the family.

Within the family, use of the fruit type and ovary characters provides a convenient, if artificial, key to separate the genera. The Jasminoideae have fruit divided in half by a constriction and ascending ovules in the ovary. Oleoideae

*Order Contorta of some authorities.

have no fruit constriction and have suspended ovules. Within the Oleoideae there are three seed types. They are these.

Fruit a samara. This conveniently separates out the taxonomically distinct Fraxinus.

Fruit a drupe or drupe-like berry. Includes Ligustrum, Olea, Osmanthus and Chionanthus.

The fruit type separates privet from lilac to which it is otherwise very closely related.

Fruit a loculicidal capsule. This group, constituted as the Tribe Syringeae, contains Forsythia, Syringa and the tropical Schrebera (which need not concern us here). Therefore, the presence of a loculicidal capsule in a temperate region member of the Oleaceae means that it belongs in either Forsythia or Syringa and there is certainly a plethora of characters to distinguish these two genera.

The fruit key, however useful, is admittedly artificial. Forsythia is not closely related to Syringa but Ligustrum is probably very close. Cytological proof of this can be found in Taylor's paper (Brittonia 5: 337-367, 1945) and practical proof can be seen in a consideration of the genera which can be used as understocks for lilac graftage. Also the fruit key groups Abeliophyllum with Fraxinus because it has a winged fruit (i.e., a samara) when there is little question but that it should be close to Forsythia.

However artifical the route to Syringa, once there the genus unfoldrs in a very natural order like this:

	Syringa L.	
Sub-genus I.	Eusyringa	K. Koch
Series 1.	Villosae	Schneid
Series 2.	Vulgares	Schneid
Series 3.	Pinnatifoliae	Rehd
Sub-genus II.	Ligustrina	K. Koch

Within the genus the Ligustrina (corolla tube only slightly longer than calyx) are separated out as the tree lilacs with Ligustrum-like flowers. Within the Eusyringa (corolla tubes much longer than calyx), the series Villosae have branches ending in a terminal bud while in the Vulgares the terminal blasts early in development so that the branches end with two lateral buds. This leaves the series Pinnatifoliae which is set apart by its compound leaves. The Pinnatifoliae will cross with one or two species in the series Vulgares, but with these exceptions, the other sections (series Villosae and Vulgares, sub-genus Ligustrina) constitute separate, natural, non-interbreeding groups.

Within the sections the lines become much less distinct and the number of taxonomic and nomenclatural problems increase rapidly. An illustrative example can be found in the pubescent-leaved forms of the series Vulgares (separated by many into the series Pubescentes). The group includes these species:

S. julianae
S. potanini
S. pinetorum
S. velutina
S. microphylla
S. pubescens
S. Meyeri

The taxonomic lines between these species are not distinct and it is possible to find overlapping features between almost all of the species. So much so that some authorities have suggested grouping several together. The species Meyeri, for example, is distinctly artificial and maintained as a separate taxon by Susan McKelvey (The Lilac) simply because today's form can be traced back to Meyer's

original plant introduction. The species can be separated using combinations of characters and as additional genetic studies add information on crossing barriers, the astuteness of Miss McKelvey's judgement become clearer. Hybrids do exist between S. Meyeri and S. microphylla and recently between S. velutina and S. julianae. These hybrids will blur the species lines even further and, in time, may require a redrawing of the species limits.

The series also contains examples of the kinds of nomenclatural problems that are under active discussion today. There is a distinct group of "dwarf" lilacs in the trade under the name Syringa palibiniana. This name is a synonym of S. velutina and therefore not valid. Syringa velutina is also incorrect, having been reduced to synonomy under S. patula by Nakai in 1959. But probably the group of plants does not even belong in the binomial S. patula. Dr. William Cummings of Morden in Manitoba believes that they should all be included in Syringa Meyeri and the genetic data from the University of New Hampshire tends to back him up. However, the "palibiniana" plants in the trade are horticulturally distinct and seem also to be taxonomically distinct Meyeri. Even the species Meyeri is in question since more than one "type" exists. Where shall these plants be placed? How shall they be named? This controversy has not yet been resolved.

The genus Syringa exists, then, alive and well and engendering the kind of continuing research and interest that will ensure its health in the years ahead. But what about the lilac beyond botanic considerations? Is it alive and well and in use today? Certainly it has a proud history in its march across Europe to England and then, with the early settlers, to the New World. And there is no question but that the lilac has survived over the years. The plants growing at the Governor Wentworth Mansion in New Hampshire (one with a trunk over 14 inches in diameter) are known to have been in place since 1750 and the clumps that mark long abandoned homesteads stand witness to the tenacity of the lilac even under neglect. But is the lilac useful today? The question is rhetorical. There are many uses, including these:

For bloom: Bloom is the reason for growing lilacs. The great profusion of flowers when the lilac blooms is known to all. It has become part of spring, remembered in song, story, poem and armloads of cut stems during the extravagance of late May bloom. It is distressing, then, to find that so many people equate bloom only with Syringa vulgaris when the full sequence could include these:

Syringa oblata	early May
Syringa x hyacintheflora	mid-May
Syringa vulgaris	late May
Syringa velutina	late May; early June
Syringa x prestoniae	early June
Syringa reticulata	early July
Syringa meyeri and Syringa microphylla	August-September (so called, rebloom)

Perhaps wth a bit of additional plant breeding to produce forms that bloom in the present time gaps, we could talk about lilacs from frost to frost.

Lilac bloom is spectacular enough to stand by itself but some would ask for additional, different plants to contribute other colors, shapes and contrasts. The list of possible candidates is so long that in any setting one can only sample the array of companion plants. Consider just these genera:

Amelanchier	Fothergilla
Berberis	Kerria
Calycanthus	Malus (sargenti)
Cercis	Rhododendron (azaleas)
Chionanthus	Viburnum
Cornus	Weigela
Exochorda	Ulmus

All have species in bloom during the time of Syringa vulgaris flowering. If the list were increased to cover the "frost to frost" list mentioned in the last paragraph, it would end up including most forms of flowering plants. Another "companion" approach would be to choose plants which bloom at other than lilac time, or to choose evergreens for winter foliage. The problem is not how to find lilac companions, but how to limit them to the space available and the goals of the planting.

For fragrance. Fragrance is frequently considered as a concomitant to bloom, yet a "sniffing" trip through any collection will reveal how many names have only pretty flowers. Fragrance certainly exists in the genus. Sax called Syringa pubescens the "most fragrant lilac" and one plant of Syringa prestoniae in a pot will fill a whole greenhouse with heady perfume. Any garden that doesn't have a fragrant lilac planted near the summer's evening sitting places, even if the blossoms cannot be seen, is lacking a fine dimension. One home near the University of New Hampshire has encouraged lilacs to grow very tall so that the fragrant blooms approach the second floor bedrooms. For them, May is indeed a memorable month.

For growth forms: Any flowering shrub is in bloom for only a short portion of the year. It has only growth form for most weeks of the year. Therefore, a desirable plant will have a type of foliage and form that is interesting beyond its bonus of bloom. The lilac certainly qualifies as a desirable plant.

This report does not have to dwell on the role of well grown, regularly rejuvenated Syringa vulgaris. Such bushes are the standard for the International Lilac Society. It is also encouraging to see emphasis being put on mound and medium height plants by the plant breeders. Such forms are frequently more useful in contemporary "one story" landscapes than great tall stems with bloom only on the top. However, one of the charms of the lilac is that it matures with such grace. Wherever possible, the lilac should be allowed to develop the great twisted stems which are unique to Syringa vulgaris. In some instances it may even be possible to develop an understory planting emphasizing the gnarled appearance of age of the mature trunks.

One use of lilacs rarely seen in this country is as a pot plant. The cut flowers in the market are regularly produced in greenhouses, but from full-sized plants, too big for small, family-sized greenhouses. However, several of the group with pubescent leaves make most effective pot plants with a minimum of shaping. Pot lilacs need a cool greenhouse, but to have fragrant lilac bloom a month to six weeks ahead of the outdoor flowering is worth devoting a whole section to cool season crops.

Rooted cuttings may also be used as pot plants in certain species. Usually cuttings do poorly if taken too late in the season after flower buds have initiated. They bloom the next spring, but at the expense of vegetative growth, so that the result frequently is clubby and unimpressive. Syringa x prestoniae, however, puts out a considerable amount of vegetative growth before the bud develops so that a full bloom truss appears above a pleasing proportion of foliage. This method of producing pot lilacs is not foolproof and flowers are regularly borne on only about 50% of the cuttings, but a five-inch pot of lilacs in full bloom for Mother's Day seems well worth the growing of a few extra plants.

(continued on page 38)

LILAC RESEARCH AND LILACS OF THE FUTURE

by Fr. John L. Fiala, John Carroll University
Cleveland, Ohio

What is the future of the Lilac? The sage has recorded for us that the past of anything is the prologue of the future. From the past it seems but a few short decades since Victor Lemoine and Madame climbed down their ladder in their small nursery-garden at Nancy in the Lorraine, France. They stood there wondering, as you and I would have, and asked, "What will come of these flowers?" We all know what a little patience, selectivity and work did for the Lemoines! That was only one beginning.

Wherever men and women (we cannot forget Hulda Klager, Minerva Castle and the work of Isabella Preston) have patiently concerned themselves with the lilac, it has responded with wonderful results. From the old forms of s. vulgaris we have come along with the magnificent doubles of the Lemoines, with Havermeyer's awesome singles. We have purer and deeper colors than ever before — truer pinks, better blues, deeper purples and combinations of all. What "Pandora's Box" remains yet to be opened?

From a scientific viewpoint of improving the lilac for the future the hybridist must be concerned with several factors, namley, substance, color, form, disease resistance/pollution, hybridization and lilac polyploids. Systematically let us consider these factors and what advancement, if any, can be attained or sought in the future.

Substance and the Lilac of Tomorrow

The term "substance" in the lilac takes several aspects that should concern the hybridist. We should seek a durability of flower petal that sustains factors of wind, sun, rain and color pigmentation that does not fail. There are all too many lilacs that are lovely upon opening but soon fade to a brownish, pale-lilac white. Since substance is directly related to the number of cells in the petal hybridists must seek out with careful selectivity lilacs that stand up well—that 'wear and weather well'. Later we shall see that one answer to increased substance seems to lie in the thicker texture of the polyploids. There seems to be a preference for flowers that shed their petals before they turn brown rather than keep them until they dry. This dropping or non-dropping petal characteristic is far more prominent as to non-dropping among the doubles, particularly those that do not set seed, as it is in the seed setters. It also appears as a genetic factor. Prominent in what is called substance is the ability to withstand heat and sun well. Although the water and soil fertility are important factors there is a degree of inheritance in this withstanding ability. We should strive to use parents that have this stamina and transmit it well. Only patient work and the recording of these characteristics will tell us which varieties they are.

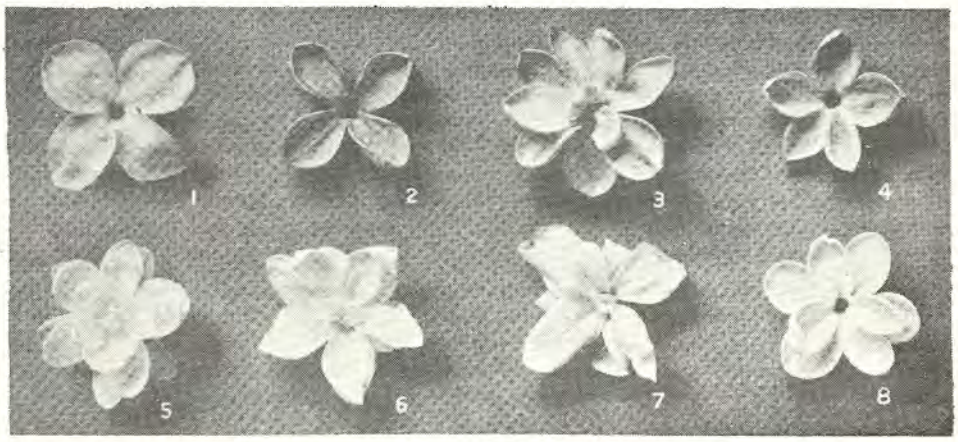
Color in the Lilacs of Tomorrow

Presently we have a wide and magnificient spectrum of colors and color combinations in the lilac. Some are striking as in 'SENSATION' (whose flower size and form and thyrsus are really quite poor), many are ordinary except immediately upon opening. Color and substance are directly related. The intensity of color depends upon the amount of pigmentation and the degree of cell

structure. Polyploids in other plants have given far deeper colors that are more vibrant, irridescent and with depth texture. We could certainly conclude that the same should be true in polyploid lilacs of the future. If we cannot adequately describe the colors and combinations we now have, the colors of the future will defy all charts and imagination. By careful selection and thoughtful breeding we should expect, even from diploids, purer colors, i.e. redder reds, deeper blues, creamier yellows (perhaps not real yellows). When we begin to have tetraploids and polyploids even deeper colors will come; then we can expect lemon yellows and orangy-reds, but only after several generations of polyploids. (This will necessitate a truly scientific approach for the hybridist.) They must learn to leave accurate, written records of their work for others to continue and not constantly retrace and rework old research and hybridizing patterns.

Form in Future Lilacs

The lilac of today already has many forms. We are not publicizing them enough. In flower form we have singles, semi-doubles, doubles, hose-in-hose, rosette forms, and now the primula form so prominent in the 'ROCHESTER STRAIN.' We can expect a perfecting of this primula pattern and a doubling of it (one can only speculate on the enormous size of a double 14 petaled primula type — perhaps it would be too large).



Floret types in actual size: 1.single,petals recurving(Clarke's Giant);2. single, cucullate or hooded or cupped petals (Vesuve); 3. semi-double(Linne); 4. primrose petaled,single multiple petlas (Rochester Strain); 5 hose-in-hose, corolla tube triple (Montaigne); 6.double irregular form(Mme.Lemoine); 7.double recurved form (Charles Sargent); 8. hose-in-hose,corolla tube double (President Carnot).

In the shrub form we have wonderful variety that has not been exploited sufficiently. We have large, manificent tree forms both in S. **reticulata** (with its cherry bark) and in S. **vulgaris**. We have lilacs for focal points that are breath taking in bloom; we have lilacs for hedges; we have semi-dwarfs for smaller homes and now we have miniature dwarfs only a few feet high. We need to work for a variety of forms for a variety of landscape uses — for less suckering kinds and greater bloom. There appears to be a particularly fruitful field in the yet practically unknown species lilacs. Varieties like 'MISS KIM' and some of the selected forms of S. **velutina** and S. **microphylla** appear to have dwarfness in their genetic make-up. They should be used more. In the forms of S. **vulgaris** we have dwarfness in 'LUCIE BALTET' and 'L'ONCLE TOM'

While dreaming the
impossible we often
overlook the
obvious....

..yellows..
reds....
creams...
pinks....
bright future colors
of lilac pods...

COLORFUL LILAC PODS are a definite possibility for programs of selection and breeding- a fruitful program for younger hybridists.

and others. What forms the late hybrids may take will depend on the patience of future hybridists. Certainly we are seeing only "primitives" in the Prestonian Hybrids and not yet their exulted future possibilities. Certain of the polyploids we now have show strange dwarfness and slowness of growth in their first stages.

Pod Color as a Future Possibilty

To the present we have been mostly concerned on how to quickly eliminate seed pods as soon as they form. Very little attention has been given to turning the fruiting of the lilac into a positive asset. The late Dr. John Rankin discussed with the author the probability of colored pods — perhaps, that might one day be as attractive as the fruit of crabs, or Mt. Ash. This is definitely a possibility if we would work to achieve it. We have at present done some selection in this area: a creamy yellow podded variety, a pink podded one and a definitely red podded sort found at Durham by Dr. Rodgers. Although this color initially lasts but a few weeks it is a definite "beginning" for an entirely new avenue of hybridization — a two-seasoned lilac that blossoms beautifully in the Spring and fruits brightly in the Fall! Again, someone must tediously climb the hybridist's "ladder" and patiently work! We need to know whether climatic conditions aid in pod coloration — what the effects of weather are.

The Disease Resistance of Future Lilacs

When we feel we know all the natural enemies of the lilac and have effective control measures, a new or hidden problem comes to light. We have learned to live with scale, borer and mildew — we have learned the systemic problems caused by poor drainage, but now we have the voraciously destructive lilac wasp and the devastating bacterial blight disease described by Dr. C. J. Gould. We hope the near future will see a control or cure of both these threatening factors. Dr. Gould seems to indicate that certain strains of lilacs appear to have more resistance to the bacterial blight. We need heed his findings lest we breed weakness into the future lilac, and debility with beauty. Particularly should we be most careful that in working to obtain polyploids we seek as sound a

genetic resistance as possible lest we blame the polyploids for the factor rather than the inherent weakness of the parents of a new race of lilacs. We need future Plant Pathologists to work with the lilac's ills and diseases.

Among the older enemies we find some plants far more resistant to scale than others. Is there something in their sap, in their cellular structure that acts as a repellent? If so is this heredity or environment? We need to know. There is no doubt that if the Society could raise the cry, the Federal Government might find the resources to research the Giant Lilac Wasp or the Bacterial Blight and perhaps even find ways of destroying both!

Everywhere around us there is the growing threat of air pollution. Cities are spreading this mushrooming cloud over garden and arboreta throughout the land. We are seeing new kinds of plant failures and inabilities to cope with polluted air. There is mounting evidence that lilacs are far more vigorously resisting pollution than first supposed. In the very heart of the most industrially polluted areas of Cleveland, Ohio, where the sulphur dioxide and air pollution is among the highest in the world, we find at Riverside Cemetery and throughout the Polish, ethnic Southeast of Cleveland, lilacs growing and blooming in this contamination for more than 50 years. In some of the chemically polluted areas of Delaware, on the other hand, they succumb rather quickly. Will newer forms be equally as tolerant as the old 'vulgaris' that fills the Inner City? Again tests and research must find out.

Hybridization in the Future of the Lilac

A touchstone of the future will be how carefully, scientifically and patiently we select our "patterns for hybridization". There are those who merely make crosses and hope for the outcome to be profitable; there are those who have a purpose in the crosses they make and who work patiently with plant generations for what they know must come about. This is not easy. Scientific hybridizing requires as thorough a knowledge of plant characteristics as is possible, a studying of whole plant populations of seedlings to see dominant characteristics and not merely selecting one here or there. A "total study" should be made of each hybridizing; this should be recorded so little by little we can build up a genetic case history for the species and the species crosses. Then we will know and not merely hope.

In the lilac hybridizing is most advanced in **S. vulgaris** and its forms. It is only at its infancy in the late flowering species and practically unknown in the very late tree forms of **S. amurensis** (where even selected clones are unknown). Not only must we do more initial hybridizing (carefully and recorded) but we must see this inter-species work continued to three and four generations to expect real quality. We have yet to see other than second generation hybrids of the late blooming lilacs. Among the species there is much yet to be begun. The hybdids **S. x Prestoniae** should be considered as raw materials to be worked with and not the culmination of effort. There is much beauty in **S. reflexa** with its drooping heads, in **S. sweginzowi** with its feathery lightness and delicate perfume, in **S. potanini** with its coral color and airy bloom, in the heavy perfume of **S. velutina,** in the deelicate leaves and blossoms of **S. pinetorum.** What wonders will be forthcoming when all these are tetraploid and have been crossed in several generations?

The Future of Polyploid Lilacs

From the strides made with other flowering plants when they have become polyploids we should expect at least as much from polyploid lilacs. It is fact that the best results in inducing polyploids is from the best possible genetic characteristics. . Therefore, we should strive to use the best lilac blood lines, characteristics, genetic strengths to build our "polyploid lilac pool". Again,

research has shown that polyploid plants (especially in tetraploids) do not show their full potential until in the fourth and fifth generations of polyploid crosses. (Genetically this gives us the widest number of varied characteristics. In first generations we are merely doubling one given set of characteristics.) We need to cross the "ugly duckling" first, induced generation of tetraploids to bring forth the children of promise. This cannot be accomplished in one generation. So far very few individual researchers have worked with the tedious, often disappointing work of producing polyploids. The author has several seedling polyploids of S. vulgaris, some chimeras and the following species in various polyploid forms: S. wolfi, S. sweginzowi albida, S. komarowi, S. tomentella and several seedlings of S. x. Prestoniae (mostly of 'Royalty', 'Nocturne', 'Kim' and 'Lutece').

The apparent effect of polyploids in the induced generation are slowness of growth (often only a few inches a year), thick stubbyness of twigs, heavier leaf texture, short, thick lateral growth; in the few that have flowered a slightly thicker petal and a deeper color pigmentation. Second generation seedlings are just small plants. We should not expect much until we have fourth generation plants — again, since the lilac so often pollinates itself, the best results should be from hand-pollinated plants to avoid the multiplication of the same genetic background. We should see far more results in tetraploid inter-species crosses than in fourth generation plants of a single tetraploid species where no new characteristics are introduced. We need qualified researchers to count existing chromosome numbers of clones and hybrids to scientifically continue this enormously fascinating work.

What can we expect of the polyploids (once we have fourth generation plants)? Greater texture and substance — thicker petaled flowers that will hold color and will withstand sun and rain. Heavier textures that will give us radiant hues with the flourescent colorings (as were obtained by the hemerocallis hybridists), should result in wonderful combinations. Polyploids should also make possible difficult crosses through the increase of chromosome ratios; we should hope for greater resistance to virus and bacteria.

How Shall the Future Come to Past?

We must work for every kind of improvement and not merely for one aspect neglecting others; we must be far more selective, scientific and recording of our work; "we must publish what little we know so that others may know more; we must encourage others to dedicate their life's work to the lilac; we must plant more lilacs in gardens at home and more public garden for all to see; we must write about lilacs;" (Dr. John Wister); we must hybridize and exchange seeds and scions—and what a wonderful future there will be for the lilac!

ADDENDA

CHROMOSOME COUNTS OF SYRINGA (Darlington)

SYRINGA $x = 22, 23, 24$							
emodi	Himalayan Lilac	44	Tischler 1930	*josikaea*	Hungarian L.	46-48	Sax & A. 1932
persica	Persian L.	44	Sax & A. 1932	*komarovii*		46-48	,, ,,
amurensis	Amur L.	46	,, ,,	*meyeri*		46-48	,, ,,
oblata		46	Taylor 1945	*tomentella*		46-48	,, ,,
potanini		46	,, ,,	*villosa*	Late L.	46-48	,, ,,
reflexa		46	Taylor 1945	*vulgaris*	Common L.	46, 47, 48	Taylor 1945
sweginzowii		46	,, ,,	*microphylla*		48	,, ,,
velutina	Manchurian L.	46	Sax & A. 1932	*pinnatifolia*	Pinnate L.	48	Sax & A. 1932
wolfi		46	Sax 1930b	*pubescens*	Hairy L.	48	,, ,,
				yunnanensis		48	Sax 1930b

STANDARDIZATION OF LILAC COLORS

by John M. Patek, Pres. COLOR DATA,
Rochester, N. Y.

Feasibility and Costs

The ideal way to establish standards for lilac colors is to start out with a color card covering the entire range of colors actually found in lilacs. Each color would have a precise numerical identification and a word description. The color of the lilac would be determined by comparing it with the colors on the color card. This is the ideal.

I estimate that about 100 colors would adequately cover lilacs, and that it would cost about $100 per color to develop and print such a card. Several thousand color cards could be so produced. This means that ideally your society should have at least $10,000 set aside for the project. I assume that as a new organization you do not have $10,000. If you are established as a tax exempt organization, there is undoubtedly someone somewhere who would donate $10,000 for the project. However, to find that person may be difficult.

The fact that you may not have $10,000 for color standardization would not prevent you from standardizing lilac colors. There are less expensive, albeit less satisfactory ways of accomplishing the task.

The most simple and least expensive way to start would be to base your standards on the ISCC-NBS Centroid Color Charts, Standard Sample No. 2106. This is available from the Superintendent of Documents, Government Printing Office, Washington, D. C., for about seven dollars. These charts will have about 50 colors which might be applicable to lilacs. What is most important is that each color shown represents a color name, and these colors can thus form the basis of a lilac color naming system. Furthermore, each color is identified with the Munsell notation which defines precisely the characteristics of the color.

A more complete set of colors can be obtained by purchasing 9" x 12" sheets of colored paper stock with Munsell notations from the Munsell Color Company of Baltimore. These can be cut into small squares and mounted on paper backing to form color cards. An adequate supply of color cards could probably be made for about $1,000.

Another approach would be to identify the colors of living varieties of lilac by sending live flowers to an approved color laboratory or a suitably qualified and equipped individual for color determination. The laboratory could use a spectrophotometer for instrumental determination of the color, or a visual comparison with known standards in the possession of the laboratory could be made by a qualified individual. In this way, known varieties of lilac would be the visual color standards; the color description would be in standard terms.

No matter which approach is taken, there will be both problems to resolve and pitfalls to avoid. To do the job properly, it will be necessary to establish color judging procedures with a full understanding of the peculiar color properties of lilacs.

In my talk I am going to assume that you may eventually have the means of obtaining a suitable color card, but that probably you will be forced to resort to an alternative approach for the time being. In any case, the basic problems are the same. I cannot avoid being technical, but I shall do my best to keep you awake.

Chemical Influence on Color Behavior

The color pigmentation of lilacs appears to be limited to a single pigment

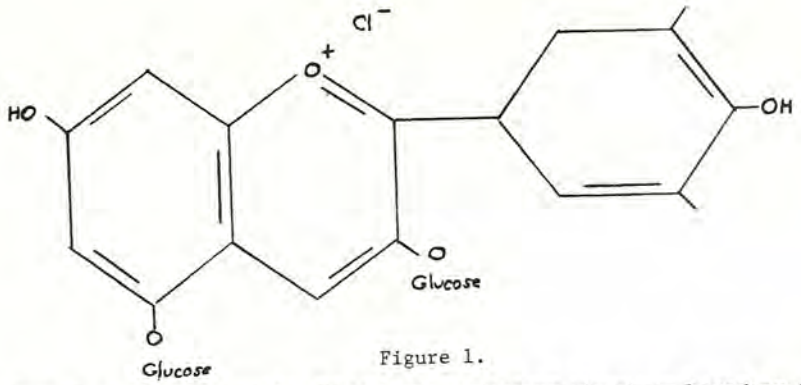


Figure 1.

group known as the flavonoids. They have a common structure based on flavone and differ from one another by their status of oxidation. Included in this group are the flavones and flavonols which vary from white to deep yellow depending on the number and orientation of their hydroxyl (OH) groups.

Also in the flavonoid group are the anthocyanins which produce the pink, red, and blue colors. They also differ in color through differences in hydration. In addition to color differences caused by differences in hydration, the anthocyanins show color differences because of a free electrical charge which make them susceptible to changes in cell sap acidity and assists their complexing with metals. The tendencey toward blueness increases with hydration, lower cell sap acidity, and the presence of metal complexes.

Slide 1 shows the structure of the purple anthocyanin pigment found in grapes as determined by the Geneva Agricultural Experiment Station. When the charge picks up a metal complex such as magnesium, aluminum or iron, the pigment turns bluer. The two OH (hydroxyl ions) also add to blueness as does the glucose.

What we have is a pigment which will vary from red to blue depending on minor changes in chemical structure. Slide 2 shows spectrophotometric curves of one yellow xanthophyll pigmented flower and four anthocyanin colored flowers. A spectrophotometric curve is produced by an instrument which measures the amount of each color wavelength by wavelength across the entire visible spectrum starting with violet-blue on the left and ending with red on the right.

It is very important to note on this chart that the anthocyanin pigment does not produce one color but a combination of two colors, namely, blue and red. Purple must always be produced this way because purple is not in the sun's spectrum. You never saw a purple rainbow. The eye creates purple by mixing red and blue. Such a color is called a metameric color, because the color will change depending on the amount of blue or red light in the light source. Under an incandescent lamp the color will look reddish, but under a fluorescent lamp it will look much bluer. Or on a sunny day it will look redder than on a cloudy day.

Some interesting conclusions may be drawn. You will never get a true blue; it will always be reddish. You will probably never get a true red; it will tend to be bluish. This will limit the range of your color card and make it possible to eliminate all colors except those in the red to reddish-blue range, and in the white and yellow-white range of the flavone and flavonol pigments. Another conclusion is that you will have to be extremely careful in establishing a standard light source for color viewing. You can purchase an artificial daylight source manufactured for color viewing, or view the colors in the

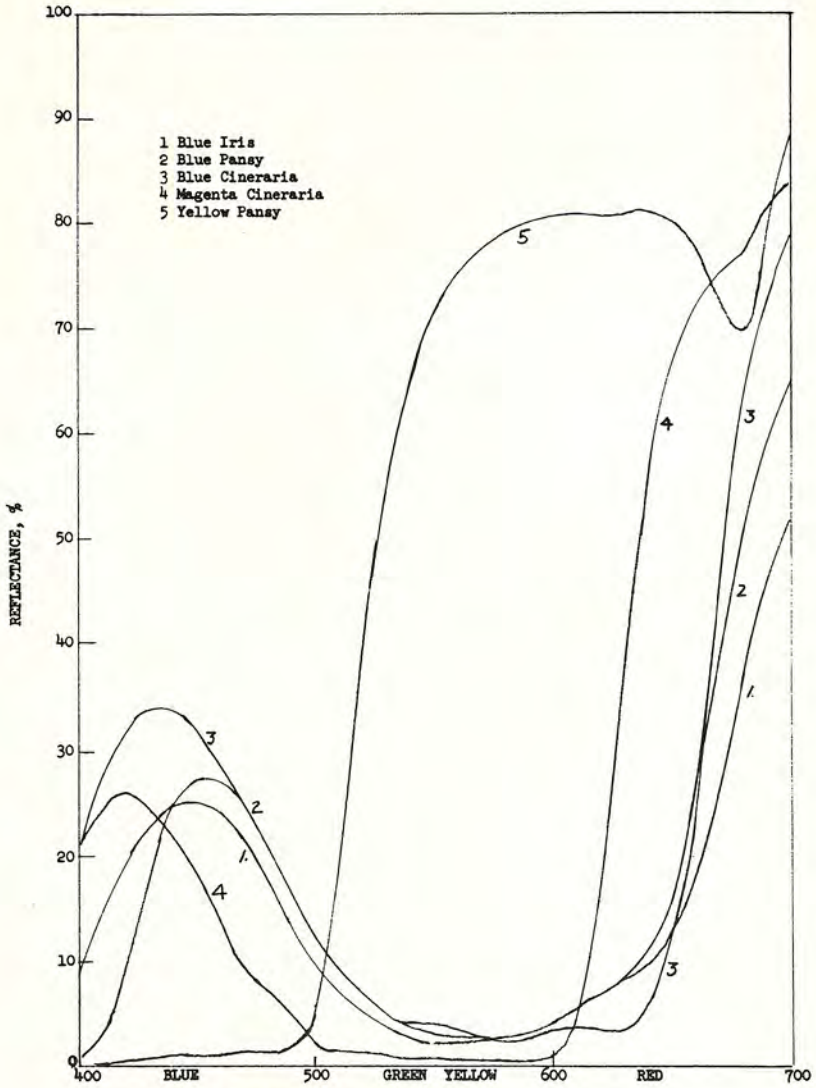


Figure 2.

light of a north window as a standard procedure. A third conclusion is that any given variety of lilac will probably vary in color with soil composition and pH, so that to be precise it may be necessary when describing the color of a variety to state the location or conditions of growth.

The Meaning of "Color Standard"

Let us retrace our steps and talk about colors rather than chemicals. Color is measured and defined in terms of three attributes no matter whether this is done precisely with an instrument or unconsciously by an average viewer. The three attributes are hue, saturation, and reflectance. Hue is measured as dominant wavelength and is the position in the spectrum recognized as violet, blue, green, yellow, orange, or red. Saturation is also called chroma or purity and is the intensity of the color. Reflectance, expressed as value in the Munsell system, is the lightness of the color. That is, how light or how dark.

The human eye can distinguish about 2 million different colors. That means 2 million combinations of hue, saturation, and reflectance. Any one of these combinations can be determined by a spectrophotometer and the results given in numerical terms.

There are no standard colors but there are standard methods of measuring and defining colors. When we talk of color standards, we are simply saying that we have selected some of these combinations, usually in some logical sequence, so that we have a basis for discussion. We can compare unknown colors with them in order to identify the unknowns. It is like using a ruler to measure inches. For a person not familiar with numerical terms as an identification, and most people are not, something more would be desirable; that is, a color name for the combination of numerical values. This can be done and has been done by the National Bureau of Standards in Circular 553 mentioned before. The procedure has been to assign to all colors falling within a stated range of hue, chroma, and value a specific standardized color name. The centroid colors in the color chart supplement to Circular 553 represent the specific color in the middle of these color name areas.

The National Bureau of Standards names are really standardized descriptions, such as "brilliant purple blue". More poetic names can be applied.

By following the procedures used by the National Bureau of Standards the International Lilac Society can establish as standard a limited number of color names for the thousands of color differences distinguishable by a trained observer. Munsell notations have been published for the colors of both the Wilsn and Ridgeway color charts, and some of these names might be adopted. I prefer the names in Bailey's "Hortus".

Technology of Color Determination

It is recognized that different people see colors differently. This problem was resolved in 1931 by agreement of the scientific world. The International Commission on Illumination agreed on the characteristics of the standard observer. This standard observer is an instrumentally determined definition of color for the average human eye. The instrument used to make the determination is the spectrophotometer as shown in Slide 2, it records on a chart a curve which shows the relative amount of light reflected from the colored substance at each wavelength across the entire visible spectrum.

The data obtained from the spectrophotometer is expressed in x and y coordinates and reflectance called "big Y" of the CIE system. Since these data are no more meaningful to the average person than expressing the location of a town by the coordinator of a road map, a number of more understandable color designating systems have come into widespread use. The three most common systems are the CIE Polar Coordinate System, the Ostwald System, and the Munsell System. Faber Birren and the Color Harmony Manual both use the Ostwald System. This system is based on the addition of black and white, but black is not found in flower colors. The Munsell System is the one most generally used in the fields of floriculture and agriculture, and also is the one used by the paint industry. It is used in America, Europe, and Japan.

The Munsell system has several major advantages. It divides color into steps as the eye would divide them. It describes color in terms that are meaningful, that is, hue, value, and chroma. The term "value" is used for reflectance, and "chroma" for purity or saturation. Each one of these three properties is expressed by a number stated in the order of hue, value, and chroma. The number of hue states its position in the visible spectrum, the number for value states the degree of lightness, and the number for chroma the amount of color saturation.

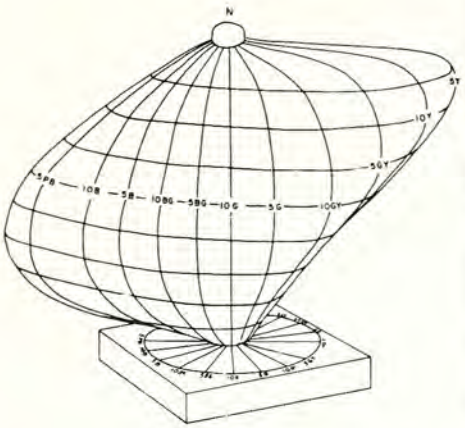


FIG. 3

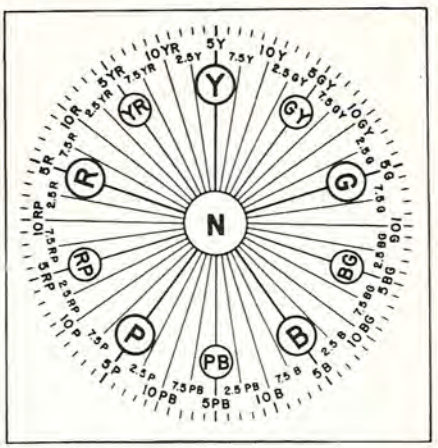


FIG. 4

This whole system is described as the "Munsell Color Solid", because the three measurements of hue, value and chroma can be expressed as three dimensions of a solid. Slide 3 shows the Munsel Color Solid. The center axis is a vertical scale without chromatic color divided into 10 numbered units from black at the bottom through shades of gray to white at the top. This is the value scale. As one moves from the center axis out to the outer surface of the solid, color is introduced and becomes more intense until maximum intensity or maximum chroma is reached at the outer surfaces. This is measured in units up to 18 in number. The hue changes as one goes around the solid, or looking down on it from above one sees the full hue circle. This is shown in Slide 4.

Since each numbered unit can be carried to at least one decimal place, it is possible to describe with numbers any one of the 2 million colors which the eye can distinguish. For example, the color of a purple lilac might be expressed as 5.0 F 5.0/9.0. This means that the color is a true purple in the middle of the purple range, about the lightness of a medium gray, with good color saturation for a lilac.

Lilac Coloration

It is because of the lack of understanding as to how flower colors are produced in nature that most color cards developed for flower color identification have been highly inefficient. They contain many colors never found in nature and fail to zero in on those that are found. As I explained above, one of the three parameters of color is the reflectance or Munsel value which represents the lightness or darkness on a scale going from black to white. In mixing paints or inks, if one desires a light color he adds white, and if he desires a dark color he adds black. Color cards have been made that way.

What has not been recognized is that nature has not provided a black pigment for flower coloration. One can rule out as flower colors almost all colors made with black. As I mentioned earlier, the pigmentation of lilacs are a chemical group known as flavonoids which include white to yellow flavones and reddish to bluish anthocyanins. The colors of lilacs, as with most dark colors of other flowers, are produced by very high concentrations of pigment in the cells on the flower petal. You may recall from your schoolhood days that some of the paint box water colors in the solid form looked almost black before you added water. If you used too much water, the color looked washed out. Horticulturally, this is called lack of substance. Colorwise, this is known as low saturation or low chroma.

Let us return to Slide 3 showing the Munsell Color Solid. The longitude line on the left side goes through P (purple). You will notice that the maximum chroma for purple is at a Value figure of about 3 on a scale of 10. In other words, the solid shows that the most saturated purple is a very dark color. You can also see that the most saturated yellow is a very light color.

Now I wish to illustrate what this means, since it is the essence of a lilac color card. My first slide showed the chemical structure of the purple pigment of a grape, and I said that this was of the same type as the predominant pigment of lilacs. So to study lilac colors, all one has to do is to study grape juice. I have prepared several color samples with grape juice. Sample 1 is pure concentrated juice. It is very saturated purple and looks almost black. Sample 2 illustrates the same pigment diluted with water or simulated plant juice. The color is now very apparent. Sample 3 is concentrated grape juice added to cream. Cream is used to simulate the creamy white flavone pigment found in lilacs. We have now produced a pale lavender. You may recall that I said that pH might affect lilac colors, and that a higher pH would produce a bluer color. In Sample 4 I mixed a solution of alkaline dishwashing compound with grape juice which produced the bluish color you see. Lastly, you may recall that I showed you that the anthocyanin pigment of lilacs and grapes was metameric and that it would change color according to the amount of red or blue in the viewing light. I shall now shine my incandescent flash light at the samples and hopefully they will look redder.

Summary

In order to attain standardization of lilac colors, I recommend the following:

1. Develop and issue for general use a color card which applies specifically to lilac colors. Otherwise, start color standardization using the color chart "Supplement to NBS Circular 553."
2. As a possible alternative, designate a central authority knowledgable in color technology to determine colors of lilacs either by instrumental means or by comparison with known color samples.
3. Establish standard procedures for the identification of lilac samples for color determination possibly including statements of maturity of blossom and location or soil conditions where grown. Also standardize the manner of color viewing and the type of light source for visual color determinations.
4. Standardize on the reporting of color data in terms of the Munsell Color System. If colors are determined by instrument, the instrumental data will have to be converted to Munsell notations for reporting. For merely storing color information, conversion to Munsell would not be necessary.
5. For convenience of communication, standardize on a set of color names based on Munsell notations following the method covered by National Bureau of Standards Circular 553.

FIRST CONVENTION (from page 18)

The annual membership meeting was held at the evening session. Following election of fifteen board members (see listing elsewhere), Parks Director Alvan R. Grant welcomed conferees to the County of Monroe's parks and presented six seedling lilacs for inspection by means of Kodacolor enlargements. These 'Rochester' lilac seedlings were raised at Highland Park by Horticulture Superintendent Richard A. Fenicchia. They honor the memory of prominent Rochesterians who contributed to Rochester's parks.

Attending this initial meeting were sixty-six members from various sections of the continental United States and from Canada, also Mr. Peter J. Green from Royal Botanic Gardens at Kew, and Dr. Claude Weber of Geneva, Switzerland.

All members in good standing as of Convention date are charter members.

All day Saturday was given to visiting the Highland Park lilac collection of more than 1000 plants of about 500 cultivars. Fortunately, only a few raindrops fell and those during the lunch break. The groups split according to historic lilacs for gardens (led by Bob Clark) and scientific lilacs for breeders (led by Fr. Fiala). Twenty-two acres of hillside with the box lunch 0.4 miles away was a treat for some delegates but nearly everyone took the workout in stride because (s)he was seeing early hybrid lilacs in full bloom and many a French hybrid in expanding bud. (Incidentally, the weather on Sunday broke so that on Monday morning the lilacs burst into bloom!) By midafternoon we had feasted our eyes on lilacs and dragged our weary bodies another half-mile to Warner Castle where the ladies of the Rochester "chapter" of ILS served refreshing tea.

The lilac banquet featured awards (see Convention Issue of Newsletter). By the time these were presented it was too late in the evening to hear the banquet speaker, John M. Patek, whose talk is given in full in the Proceedings.

The Sunday tour to Durand-Eastman park featured a roadside planting of the little-leaf lilac. Other plants were observed all of which were planted by "Barney" Slavin.

THE LILAC IN CULTIVATION (from page 22)

Let us realize our limitations in size and in climatic adaptation. We can do our best work in northern areas and in gardens which have room for at least one or two varieties. We can encourage public planting where 100 or 150 varieties may be shown.

In many ways this is an untouched field and because of this I hope we may in our first years bring together several hundred persons who will become really interested in the Lilac and who will give dedicated interest to the Society.

I would like to conclude with the resolution written by the Dr. Harold B. Tukey, then head of the Department of Horticulture of Michigan State University and presented to and passed by the American Horticulture Congress at the end of its Annual Meeting in Boston in 1959—"It is the evident sense of this meeting, that horticulture has reached majestic stature in these United States of America; that it is represented by an enormous industry; that it is playing a significant role in the economic, social, and spiritual life of the nation; and that it has in its ranks men and women of great vision, ability, and purpose. With these facts in mind, all persons identified with horticulture may and should speak boldly, confidently, and with faith in the great values which horticulture possesses, and in the contribution which it makes to the individual citizen, the nation, and the brotherhood of man."

LILACS TODAY (from page 26)

For attracting birds: The last point of this report is one not often included as a virtue of the lilac, yet consider these points. Fertile forms of the lilac produce abundant seed. This seed falls to the ground directly under the lilac where it is available for ground feeding seed eaters. One such bird is the cardinal which prefers to feed in the shelter of woods or shrubbery and has been observed feeding specifically on lilac seeds. It is said that cardinals, as well as a number of other birds, are on the increase because of the increase in winter feeding stations. Surely the lilac can be considered an excellent feeding station and increases in the extent of lilac planting can hasten the increase of such birds as the cardinal.

Therefore, it can be concluded that the lilac is alive and well and living wherever people enjoy its many talents. Building on a past studded with romance, standing vibrant but not yet perfect today, it anticipates a future expanding to the horizon and beyond.

FROM THE BAYARD CUTTING FOUNDING IN 1971 TO THE ROCHESTER CONVENTION OF 1972

THE YEAR "ONE" ---

Accomplishments.....

May 1971 - May 1972

FORMATION MEETING

INCORPORATION

PUBLICATIONS
"NEWSLETTERS"
"PROCEEDINGS"

INTERNATIONAL BOARD MEMBERSHIP

IMPRESSIVE ROSTER OF CHARTER MEMBERS

EXECUTIVE VICE-PRES.

FIRST CONVENTION

AWARDS & HONORS

ELECTIONS

RESEARCH PROJECTS

WORKING COMMITTEES

Founding Members at May 1971 meeting at Bayard Cutting Arboretum, N.J., left to right: Lourene Wishart, Mr. and Mrs. William Utley, Mr. and Mrs A.T.Wilder, Dr. Robert Clark, Walter Oakes, Dennis Brown, Franklin Niedz, Orville M.Steward, Fred Van Orden and Mrs. Franklin Niedz.(Not in picture: Case Westerbeek, Ellen Steward who was hostess and Fr. John L.Fiala the photographer).