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ATTRACTING YOUNG PEOPLE TO HORTICULTURE — FROM A UNIVERSITY VIEW

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What is horticulture? Bailey describes "horticulture" first of all, as "the cultivation of a garden or orchard"; then secondly "the act of growing fruits, vegetables, and ornamental plants". Thus literally, horticulture means "garden culture". How do we interest young people in "garden culture"?

HISTORY

Historically, the region of Mesopotamia was one of the cradles of horticulture. The valley of the Euphrates became the land of palms, dates, figs and, in short, "The Garden of Eden". Tree worship or dendrolatry grew up here because the palm meant so much in the lives of the people for food, fuel, shelter, textiles, drink, etc.

Archeological records from Assyria show symbolic religious use of pollen and pollination methods; in short one of the phases of the Chaldean culture. The Chaldeans were followed by the Assyrians and Babylonians who extended their civilization into Egypt. The Babylonians cultured the beet, lettuce and radish. Wheat and dates were agricultural staples and rent for land planted with dates was worth five to seven times land in wheat.

The Phoenicians were important in establishing contact with the rest of the world, even to England. This trade was valuable as a means for the dissemination of seeds, plants, and horticultural products.

In 6000 B.C., Crete was inhabited by cave dwellers who had no form of agriculture except cattle raising. But about 3500 B.C. trade

with Egypt began and we found bean, fig, plum and quince were being cultivated.

The Greeks were influenced by the Cretes. Not a rich country, Greece flourished by trading. Wine, olive oil, and flowers became very important commodities for the Greek's luxurious life.

Theophrastus Erosos, a pupil of Plato and later Aristotle, is noted as the greatest botanical writer prior to the 16th century. He gave accounts of strange plants in quite academic fashion in an attempt to classify them. He studied leaves and roots and noted that leaves were of some benefit other than for shade and the roots served as more than just anchors. He described the apple, pear, cucumber, and pomegranate.

He was also noted for his propagation techniques. He used asexual propagation methods, wrote of the variation of seedlings which produced fruit inferior to the mother fruit and advocated the removal of dead wood only except when trees were old and poor. He mentioned grafting.

Much later (65-68 A.D.) Dioscorides, a Greek in the Roman Army, worked as a surgeon. He wrote concerning the use of plants for their medicinal purposes. His work was considered an authority for 1500 years. He recommended herbs for deadening pain.

The Romans, too, were keenly interested in horticulture. Virgil's four books of Georgics in verse represent the best literature on Agriculture. He mentions cleft grafts, budding, and some grape varieties. The purpose of the works was to encourage a "back to the farm" movement to try to eliminate some of the excess population of Rome, a government propaganda move.

Then we skip rapidly through the Dark Ages — 450 A.D. to 1440 A. D. — during which learning and knowledge decreased.

In Europe, beginning with the 1500's, again an interest in plants by druggists and doctors for medicinal purposes began to flourish. We have many references or "herbals", the books written to describe and reference plants, but from the medicinal viewpoint. Many herbals also contained information on the culture and propagation of these plants.

From this wealth of plant information several systems of classification were developed. The Linnean, or Artificial system, was developed by a Swedish doctor, Carolus Linneaus, who at the age of 32 was already the author of 14 botanical works.

Thus we see horticulture's original meaning was concerned with the basic production of fruits, vegetables, and ornamentals. Today we know it to be much more complex.

PRESENT

Horticulture is either a vocation or an avocation. It involves the

propagation and use of plants and their products, exclusive of agronomic and forestry crops. The diversity of horticulture crops is staggering, — asparagus, flowering dogwood, pineapple, peonies, poinsettias, catnip, and bonsai Horticulture is an exciting and dynamic field.

We must realize that the abundant supply of fresh fruits, vegetables, flowers and ornamental plants in our supermarkets and nurseries just didn't occur like magic. Fifty years ago, few Americans could eat fresh strawberries in the winter, buy sweet corn in March, enjoy potted chrysanthemums for table centerpieces on the Fourth of July, or plant a dwarf fruit tree in their penthouse garden. These "miracles" are the result of the study and practice of horticulture.

The science of horticulture has taken the worm out of the apple, the scab off the pear, the mildew off the rose and the seed out of the watermelon Scientists in the field and in universities have created new plants and new varieties to improve the appearance, taste and nutritional value of foods, to add color to fruit tree blossoms, and to nurture trees along city sidewalks and in public parks and forests.

Horticulturists have designed storage facilities which provide year-around seasonable fresh fruits and vegetables, bring flowers into bloom for off-season enjoyment, improve fruits so they can be harvested more efficiently by mechanical means, lengthened the planting season of ornamental trees and shrubs so, in some areas, planting can continue anytime the ground is not frozen.

A new type of horticulturist, in great demand today, is the landscape manager. This person must combine the knowledge of plants, art and design to plan functional, aesthetically appealing landscapes and then he must have the capability to efficiently manage them. In many of our urban landscapes, it is truly a challenge to get plant material to thrive or grow, let alone survive.

A comparatively new field, and one with which many horticulture departments have been actively involved is landscape architecture. Landscape architecture is the planning and design of the physical environment of man as it relates to the land, how it is shaped and changed, and the placement of structures and objects upon it. Landscape architects combine their knowledge of horticulture, design and natural sciences to creatively relate land, water, buildings and plants into pleasant and functional environments where people work and play. In short, the landscape architect is a professional who is dedicated to environmental improvement through planning and design related to the land. The student who enters this field must be interested in art, mechanical drawing and plants.

OPPORTUNITIES

Professionally trained people are needed to fill jobs in every horticultural specialty. As a nation and as individuals we are becoming increasingly aware of the importance of plants to life on the earth. Our rapidly expanding suburban population and our increased leisure time have all boosted the size and scope of the horticultural industry. Economic experts expect the volume of garden center and nursery business to more than double to over \$8 billion by 1980. This will provide many opportunities for horticulturally trained people capable of assuming scientific, technical and managerial responsibilities.

Garden centers, nurseries, and suburban horticulture will need more qualified managers for retail outlets, better prepared writers and editors for garden pages of the local newspaper and for specialized publications, and qualified teachers and extension agents who can help individuals and communities improve their environment. Also barely touched are programs with low-income, inter-city groups and horticultural therapy.

There's a great need for qualified growers of plants in all phases of horticulture. A recent article in *Weeds, Trees and Turf* points out that one large Florida-based foliage plant grower is currently doubling his space of 30,000 sq. ft. to acclimatize trees and tropical foliage plants for use in interior landscape plantings and covered malls.

Today, the need is greater than ever before for ambitious, industrious, intelligent and concerned horticulturists and landscape architects.

UNIVERSITY TRENDS

Let me use our own Department of Horticulture at Purdue University, as an example. We have programs in teaching, research and public service on fruit, vegetable and ornamental crops, including those for residential plantings. We have both undergraduate (4 year) and graduate curricula. The undergraduate offerings are divided into Horticulture and Landscape Architecture options, with certain courses offered on regional campuses and at Vincennes University (a 2-year university).

Even in Indiana, the conservative Midwest, noted for its corn, hogs, wheat and soybeans — there is greater interest in and concern for that part of agriculture which embraces horticulture. We too are becoming more urban. Our growers are close to large population centers which puts us in a relatively favorable competitive position for the production of such bulky and highly perishable products as potted ornamental plants, and certain fresh vegetables and fruits. We anticipate a substantial increase in service enterprises such as

landscape maintenance, food processing, farm marketing of horticultural products and the professional services of landscape architects.

Specifically in our teaching program we have experienced major increases in student enrollments. During the past nine years (1962-71), student numbers in courses offered by Horticulture have tripled, majors have increased almost five fold, and service course enrollments have increased three fold. Growth has occurred proportionately in the Horticulture and Landscape Architecture options and resulted in a three fold increase in teaching (FTE) needs. Additional increases are seen throughout the next 15 years.

Through the years, the university approach has become more scientifically and theoretically minded. We've had a general reduction in laboratory or "practice" courses, mainly for two reasons. An inflated economy has forced the curtailment of large laboratories with much equipment and also there is the feeling that that such "practice" is much better handled in the field under expert supervision.

Also in some instances some of the basic horticultural information and techniques are being taught in botany, e.g., seedling growth, planting, etc. At Purdue, the basic botany courses are taught in an audio-tutorial laboratory where each student is required to take a series of mini-courses. Such courses can be reviewed or perhaps even written by the horticulture staff.

There is also an increasing percentage of horticulture students who have little or no experience or background in horticulture. Somewhere in their training they must be taught to grow plants if they are to be capable of commanding an acceptable job upon graduation.

Another trend is to abandon the crop-oriented course for the discipline-oriented course covering all horticultural crops, with such courses as "Physiology of Horticultural Crops" and "Genetics of Horticultural Crops". Our department is still floundering over this particular problem, as I suspect many others are.

All institutions have a basic "core" or general college curriculum for all incoming freshmen. Often these are the standard requirements of English, math, chemistry, etc. The student often waits until the second or third year before beginning work in the desired speciality. The School of Agriculture at Purdue has reduced this core requirement and now encourages the student to take several freshmen agricultural "electives" during the freshman year so he can choose his major early in his study.

Recently as a part of a School of Agriculture long-range planning review, our department outlined the following goals:

1. Development of opportunities for dual majors in horticulture and allied fields such as education, turf, community development and (4-H). Several other universities already have this option.
2. Development of a Cooperative Intern Program to broaden and strengthen training in undergraduate curricula. (We have had several students already involved in this "field practice".)
3. Development of better mechanisms to assist in student placement to ensure maximum employment opportunities for graduates. (The role of extension specialists, agents and industry must be emphasized here.)
4. Development of opportunities in graduate education in Vocational Horticulture to meet the training needs of educators in extension and secondary school programs. Expansion of intensive summer courses will be required.
5. Broadening of service courses. Increased interest is anticipated in service courses in floral art and residential horticulture. (We have just split our one course dealing with both aspects into two separate courses.) Courses on these subjects should also be offered through the Division of Continuing Education (adults).
6. Continued support of sub-baccalaureate programs at regional campuses or other state institutions.

INDUSTRY SUPPORT

What can industry do to support horticulture? Industry — individuals, businesses and organizations alike — need to encourage and support horticulture training programs wherever possible. This means support for the university level in teaching (training), research and public service needs. It also means supporting vocational training whether it be in Vocational Horticulture or other agricultural training programs. Teachers and counselors are anxious for information concerning the horticultural industry. Don't be afraid to invite classes to your business or go into the classroom and tell your story. Assist youth programs such as 4-H, scouts, junior achievement, etc. Our horticulture 4-H projects are big sellers for urban as well as the rural children. We've found youngsters who take a 4-H project in horticulture are more apt to use this in later life than one who raises a steer or grows soybeans. When asked, serve on advisory councils, school boards and tell the horticulture story. Being aligned with agriculture is not always desirable since many people sometimes "look down" on agriculture. But show them you are a professional, whether in horticulture or agriculture.

Industry needs to demand qualified personnel in all areas of teaching, from the university level through secondary school. Demand that Vocational Horticulture teachers are trained in horticulture. You don't teach horticulture the same way you teach vocational agriculture. Encourage dual teacher training programs in horticulture and education.

Encourage a close relationship with the extension horticulture personnel in your area or state. Consult with them regarding problems, and tell them what your needs are. Likewise work with the interested civic groups such as garden clubs, etc. You never know what indirect influence you may have on some young person. Public service people work with many who consider horticulture an avocation, including children.

Industry can help support the increasing need for landscape foreman and managers. Many of you are incorporating such personnel into your present operation. Other operations will spring up independently. Too many people today have the technical horticulture background, but lack the managerial ability on marketing and managing. Encourage these youngsters to obtain this training.

And lastly, we must realize that horticulture is a profession. We know that ours is a materialistic society; to most of our young people money is still important. We discourage young people from going into horticulture when we hire a young man to hoe weeds at \$1.25 per hour and his best friend can make \$3.25 painting houses or working in a factory.

We must recognize that salary is important, no matter at which level you are working. The most recent survey (1972) of agricultural graduates with a B.S. indicates an average starting salary of \$8650. This is an increase of \$3180 since 1962. This year starting salaries will range from \$7000 to over \$10,000. We presently have a new graduate who will be receiving nearly \$10,000 in his first job.

SPECIFICS AT PURDUE

We try to encourage participation in horticulture at Purdue in the following ways:

1. Staff members take an active part in on-campus career days for high school students.
2. We've developed a slide set showing some of the careers in horticulture.
3. We've tried to disseminate information to counselors, and worked with teachers, extension agents, etc. in horticulture programs with all ages of youth.
4. We try to plan exciting field trips for classes. Funds are the limiting factor

- 5 We are trying innovative teaching methods — audiotutorial set-ups for teaching plant materials, and a new self-guided walk-around campus tour with a recorder for plant material study.
6. We have an active Horticulture Club which makes and sells over 6000 gallons of cider each fall, stages a public horticulture show for 6000 people yearly and takes a 10-day expense paid trip to some southern horticultural region (Florida, Texas) each year.
7. We have an active program in home horticulture which reaches many people through publications, exhibits and mass media. A new course in this area has drawn much student interest.

SUMMARY

In summary, there is a challenge and a need for young people in all areas of horticulture, whether it be from the vocational or avocational viewpoint. I encourage all of you to present yourself as a dynamic professional. After all, we've been growing and nurturing plants for many, many years.

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HAROLD TUKEY: I think these two talks demonstrate that there are some things we can do to attract young people to horticulture. I believe this aspect of a profession, as John mentioned, is important. It is not only the young people we must convince, but in many cases it is their parents who must be sold that this is a respectable profession for their children to be in.

At this time we come to a section of the program which has come to be standard and that is, Al Fordham's New Plants Forum.

AL FORDHAM: We do have a few new plants to show you and because of the lateness of the hour, we will begin with the first speaker, Ed Mezitt, who has some selections of rhododendrons which he has made.

ED MEZITT: Rhododendron 'Balta' is a hybrid resulting from a cross I made a number of years ago between Rhododendron 'PJM' and *R. carolinianum* var. *album*. It has the vigor and hardiness of 'PJM'. Its winter foliage is a bright green and its blossoms are pure white, becoming blush-toned as they age. The flowering time of 'Balta' follows 'PJM' by a few days although this spring they flowered almost simultaneously. Only four clones were selected from several thousand plants and this one appears to be the most promising.

Rhododendron 'Wally' is a clone of a group I have been growing as "Shrimp Pink" hybrids. It is from a cross I made between *R. mucronulatum* 'Cornell Pink' and *R. carolinianum* var. *album*. The beautiful large-headed pink flowers are produced profusely on this very vigorous plant. It needs pruning after flowering to keep it compact during its early growth. The foliage is narrow but a pleasant green and evergreen, though not heavy. Plant and flower buds are very hardy here in central Massachusetts. Flowering date is between that of its parents.

AL FORDHAM: Wayne Mezitt has a *Taxus* and an *Enkianthus* he would like to tell us about.

WAYNE MEZITT: *Taxus baccata* 'Fowle' was found as a seedling in the 1930's at the Fowle Nurseries, Newburyport, Mass. It was unnoticed for many years and was then sparsely propagated because of its coarse root system when grown from cuttings. More recently, grafting was tried on good rooted varieties of *Taxus* and this has been successful. The original plant, now about 4 ft high and 8 ft in diameter, is at the Arnold Arboretum.

This clone is exceptional because of its dwarf habit and midget boxleaf foliage. The winter color is superior to most *Taxus* varieties. It produces annual fruit and requires no pruning. Even though it appears to be a dwarf, it grows relatively fast; a 12-15 inch plant can be produced within 5 years. It is an excellent subject for shaping into forms because of its rigid branching characteristics.

Enkianthus campanulatus is a deep pink-flowering, second generation hybrid of a pink flowered selection. It is exceptional landscape plant with an ultimate height of 10 ft, with long-lasting buds and flowers and spectacular, persistent, red, orange and yellow fall foliage. The upright habit of young plants changes to a more spreading, artistic form when mature. It is easily propagated from seed or cuttings.

AL FORDHAM: Pete Vermeulen would now like to tell us about some rhododendron selections he has made.

PETE VERMEULEN: This is a Dexter hybrid selection which is 37 years old and has failed to bloom only one year. It is a compact low grower which blooms in our area in late April or early May which is about 1 to 2 weeks ahead of most rhododendrons and it propagates readily from cuttings. It is quite hardy and has taken temperatures down to -20° F. The name is 'Pink Sparkler'.

AL FORDHAM: Dick Jaynes has another *Kalmia* selection which he would like to show us at this time.

DICK JAYNES: *Kalmia angustifolia* 'Hammonasset' is a clone selected from a wild population of sheep laurel for its rich, bluish-rose flower color and relatively compact growth habit. Based on the Nickerson Color Fan the predominant color in the open flowers is strong purplish red (7.5RP 4.5/12). The color in the center of the flower is lighter. The plant is floriferous, performing best in full sun. It flowers in June at the same time mountain laurel is in bloom. Like other sheep laurel this selection is stoloniferous and can effectively be used as a ground cover. Its native habitat is a moist site (nearly swamp condition) but given a mulch, such as wood chips, it thrives in normal garden soils with a pH of 4 to 5.5. The mature height, grown in full sun, is 20 to 25 inches.

Satisfactory rooting has been obtained with semi-hardwood cuttings taken in late summer or early fall, treated with a solution of 1 part No. 2 Jiffy Grow to 2 parts water, and put under mist or plastic. Vegetative shoots with no flower buds root more readily than shoots with flower buds.

The Indian name 'Hammonasset' was suggested for this plant by Mike Johnson of Summer Hill Nursery. The original plant was found in 1961 in a population of some 300 flowering sheep laurel within a few hundred feet of the Hammonasset River in Madison, Connecticut.

AL FORDHAM: Carl Gullo had a couple of slides he wanted to show, but he had to leave early so Dave Dugan will show them for him.

DAVE DUGAN: This is a *Taxus* which came from a batch of seedlings of probably *T. cuspidata* 15 or more years ago. This plant has never been sheared and you will note that it is about 6 feet high and about 18 inches through, a very narrow columnar habit. It carries good dark color all winter.

Carl also has selected this rhododendron which is quite fragrant. It is an annual bloomer, blooms heavily with an exceptional fragrance and is quite hardy.

AL FORDHAM: Doug Weguelin has a few slides he would like to show us of some English plants.

Editor's Note. Doug Weguelin showed slides of a hybrid *Mahonia*, *Cotoneaster* 'Donner's Gem', *Genistra cinerea*, *Chaenomeles*, and *Buddleia* 'Opera'.

FRIDAY EVENING SESSION

December 9, 1972

PLANT PROPAGATORS' QUESTION BOX

The question box session convened at 7:30 p.m. in the Terrace Room. Dr. William Snyder presided as moderator.

MODERATOR SNYDER: Good evening, ladies and gentlemen; since you are all familiar with the Question Box session we will not waste time with formalities but we will begin with the first question. What is the background and history of *Taxus* 'Taunteni'?

CASE HOOGENDOORN: It came from Taunten, but I believe it originally came from the Arnold Arboretum.

MODERATOR SNYDER: Mike Johnson, while at your nursery, I noticed that the roots on your azaleas only went down about halfway in the can, what is your explanation?

MIKE JOHNSON: I am not sure. Most varieties do tend to go down but we have noticed that on *Rhodendron vaseyi* roots rarely go down very deep in the can. For some reason the roots stay rather shallow; it may need more aeration and this may be one which we should grow in Swiss cheese cans.

MODERATOR SNYDER: Would *Quercus palustris* grow better if inoculated with mycorrhiza, given an acid soil condition?

RAY HALWARD: I would guess that seedling oaks would develop mycorrhiza in time.

MODERATOR SNYDER: Does anyone have recommendations for propagation of redbud by cuttings?

PETE VERMEULEN: I believe there was a paper given at the St. Louis meetings on cutting propagation of redbud.

DON KRIZEK: Dr. Lewis Gregory at the Plant Growth Regulator Lab, USDA in Beltsville, Maryland, is doing some work on the propagation of this plant. He has some easy-to-root and some