

your Society. Some of you may say, "why, I can't write — or I don't have anything to contribute." That isn't entirely the idea. You can come. And who is to know what you have to offer unless you are willing to communicate? Every effort is made to shift the meetings in each region frequently enough to permit us to attend at least once every three years. Some of us find the Society so valuable we don't want to miss any of the Conferences. So will you, each individual, resolve to help the officers make your organization a much more successful one. Thank you.

TEACHING OF ORNAMENTAL HORTICULTURE ON A COLLEGE LEVEL

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Teaching of Ornamental Horticulture on a college level, or on any other level for that matter, can be effective only if we have good students to teach. To me, it is the primary responsibility of an industry to do the recruiting of young people to train for key positions in the future of the industry. And in Ornamental Horticulture I don't believe that we have done a good job of recruiting.

When I was younger, growing up in the horticulture trade, one of the big crops was geraniums. It was a common practice for the grower to have all of his geranium plants in one house. As the plants came into bloom they would be sold — the earliest blooming and most vigorous plants selling first. Propagation was done by taking cuttings from those plants that were not sold and the grower's constant complaint was that strain was running out.

I believe that many of us in horticulture have done the same thing. Someone else has taken the early blooming and vigorous young people. Many of those coming into our industry are the ones that were left.

We need to do a better job of selling. We need more pride in our business, and we need to convince ourselves that it has a future. I can recall several years ago of taking our students on field trips to one of the most successful nurseries in the area. The owner would always greet us with the question "What do you want to go into the nursery business for? You'll never make any money." I am sure that deep down in his heart the nursery owner didn't believe what he was saying. Perhaps he was just afraid of future competition.

Contrary to common belief, not all of today's youth are out solely for the dollar. Many of them select a career because it presents a challenge, because of previous experience, or because of the romance involved. Horticulturalists need to dress up their image to compete with the romance of aviation or the pres-

tige of some of the professions. We need to educate the high school counselors as to the possibilities in Ornamental Horticulture, because it is one of the fastest growing and most challenging areas of all of agriculture.

The teaching program in Ornamental Horticulture that I am going to describe is quite different from that which you may be acquainted with in the Land Grant Universities. The one with which I am concerned is the type found in California in the four-year state colleges.

The responsibilities for education in California, as defined in the study of higher education, makes a distinct division of authority among three areas of post-high school study.

The areas of research and agricultural extension are reserved for the university, as is most of the graduate work in agriculture.

The role of the junior colleges, and each year we have more of them offering instruction in horticulture, is that of vocational training. Even though some of their graduates go on to a state college or university, the junior college emphasis is upon a two year terminal program to place a well trained man in vocational employment in the local community.

The role of the state colleges in California is somewhere in between these other two areas. While each of our students at Cal. Poly must complete a thesis as a prerequisite to obtaining his bachelor of science degree, and some of these amount to pretty good research problems, our real goal is the training of young men and women to assume key managerial positions in the production areas of the nursery, florist, and landscape industries of California.

Their training must be a combination of knowing how to perform a given operation as well as knowing why it is being performed. Our program is set up so that the students take courses in their major, beginning with their first quarter of college. With major work as a background we believe that they have a greater appreciation for the chemistry, genetics, physiology, and economics when they reach that point of their studies.

Cal. Poly is probably unique in the United States in the respect that our teaching program is set up along the lines of commercial horticultural operations. The students maintain a commercial nursery and flower shop on the campus and own most of the plants that are grown. They share in the profits from the materials sold and, believe me, the monetary incentive is just as evident during this training period as it is later in life.

The College's good relations with the various trade associations in horticulture play a most important part in the educational program. Each year over 200 members of the California Association of Nurserymen meet on the campus for their annual Refresher Course. Many of them attend our Horticulture Club Awards Banquet and they mingle with the students for two and a half days. What better way to inspire students for a career

in the nursery industry or to acquaint the nurserymen with our program of education?

The California State Florists Association has worked with us for the past nine years and was responsible for the establishment of our program in floral design. They have contributed financially each year, enabling the students to have a much greater supply of flowers than could be provided through the state budget alone. They also have made available the services of outstanding guest floral designers.

The International Shade Tree Conference and members of the California Landscape Contractors Association meet regularly on the campus, presenting an opportunity for students to participate in their programs and to learn about possibilities for careers in the areas that these associations represent.

I would like now to elaborate on the commercial type production program that our students follow in their four years at Cal. Poly.

The entering freshman starts with a course in Orientation to Ornamental Horticulture in which he learns about the many phases of the industry as well as the operation of the department. At the same time he is taking the course in Nursery Operations in which he studies the preparation and treatment of standardized soil mixtures, seed sowing, transplanting, potting, canning, etc. We probably mix and sterilize more soil in one quarter than most college students will see during their entire careers. We were one of the early adherents to the U.C. program of growing healthy container stock, even at a time when Dr. Baker's ideas were not popular among some segments of horticulture. Manual 23 is practically the Bible for our department and even when the nurserymen eat their refresher course luncheons in our head house you can always find the crock of formaldehyde solution for sterilizing anything that hits the floor.

During the second and third years our students interested in growing nursery stock take two courses in propagation. In addition to their greenhouse work they follow through on a complete seed bed program and field growing operation. This includes seed extraction and cleaning as well as treatments to speed up germination of seeds. A typical crop grown by the students is Modesto Ash. This begins with sowing of seed in a prepared bed and growing the seedlings on for a year. The second year they are lined out in the field during the fall, where they make sufficient caliper for late spring budding. After lopping in June the bud strikes and the tree will make a five foot whip that same year.

In the Advanced Plant Propagation course we also do a considerable amount of grafting. Although grafted conifers are not commercially important in our area, we believe that bench grafting is a technique that every plant grower should master. Each year we receive *Picea abies* understocks from Jack Hill at Dundee, Illinois. These are forced in the green-

house until white roots appear and are then veneer grafted. Our other major grafted crop is Juniper, in which we side graft juniper clones onto *hetzi* liners. Since the academic year is divided into twelve-week quarters, we have to force the grafts to get results before class is over. We have settled on a program of forcing which involves heat and mist, as well as plunging the grafted plants. It probably increases the mortality but it certainly saves time.

With this as an introduction to our instructional program, I would like to show some slides which will better illustrate what we are doing toward meeting the need for trained horticulturalists.

(Slides)

To conclude my presentation I would like to emphasize several points that we consider essential to a good teaching program in college horticulture.

1. We must have support of the industry.
2. We need a better recruiting program for good students.
3. Students should begin their major work early in their careers to keep up their interest. This is the key to keeping them in the department.
4. Students should be kept busy with work related to their major. We like to see them around the greenhouses during their spare time.
5. We must maintain high standards in workmanship as well as in academic areas.
6. We need a good placement program to fit these students into the right job.
7. We should follow up on our graduates to see how well they are doing the work *for which we thought they were trained*.

This teaching of Ornamental Horticulture is a rewarding career. With 113 students in the department there is never a dull moment. The students are optimistic about the future and their enthusiasm and interest are contagious.

Keeping up with the progress and success of approximately 250 of our graduates gives me the feeling that they are living up to our expectations and that there truly is a future for our industry.

MR. JOLLY BATCHELLER: Howard, I think they would be interested in the per cent of placement in the field we have.

DR. BROWN: I know in a good many areas of education there always is a question of how many of these students go into the line of work in which they're being trained. One of the things we encourage our students in Ornamental Horticulture to do is not to over-specialize. In other words, don't say, "I'm going to be a nurseryman. I don't want anything in floriculture or landscaping, or I don't want to take any courses in sales or business. They have to take a fairly wide variety of courses the first two years. Then in the third and fourth year they can

specialize in these major areas. The survey that I mentioned of two hundred and fifty of our alumni in ornamental horticulture indicated that approximately eighty-five per cent are still employed in ornamental horticulture or a very closely allied business. Now, this would mean sales and field representative for insecticide companies, fertilizer companies, teaching of horticulture, or this type of thing. Your figures, Jolly, would be about the same I would imagine. A lot of them do stay right within the area for which they are trained. This is interesting too because we have had a few that have gone from ornamental horticulture into electronics and some of these areas. Their degree in O.H., if they go to work for Aerojet, for instance, is just as valuable to them as one in engineering as long as they've got their degree and can do the work. There is a real temptation for them to jump to another line of work where the salary might be higher, but I think most of them are in this line of business because they really enjoy it.

ROUNDTABLE DISCUSSIONS

CHIEF MODERATOR — DR. J. HAROLD CLARKE

I. Greenhouse plants

MODERATOR: R. E. WEIDNER

SEED GERMINATION OF GREENHOUSE CROPS

WESLEY N. KEYS

Greenhouse Manager, Bodger Seed, Ltd.

After spending the first 36 years of my life as a dairy farmer in Fond du Lac, Wisconsin, I spent 2 years teaching in a floral design school in Denver. I then went in the florist business with one of my students in Lompoc, California. In 1949 I went to work for the Burpee Seed Co. as their Double Petunia Propagator and Greenhouse Manager. In 1956 with the onset of Red Satin Petunia I went to work for Bodger Seeds Ltd. as their manager.

If you are successful with your present method of producing good seedlings, don't change; but if you are having trouble, the first thing to do is order Manual 23 (The U. C. System for Producing Container Grown Plants) available for \$1.00 from any University of California Agriculture Station.

At Bodgers we grow about 5,000 seedling flats, 40,000 pricked off flats, plus 100,000 pots for seed production of F₁ petunias, F₁ snaps, Coleus, Impatiens and Gloxinias. In our