

field. The average classroom has increased in number from 20 to 80 and the student-teacher relationship declined. The result is more graduates knowing a little less about the field than those before.

There is also the problem of professors who have little or no practical experience. There is no doubt they can do a good job teaching, especially if they attend meetings of this type, visit nurseries, and become acquainted with nurserymen and the practical aspects. It's important to have professors who can offer counseling to students with respect to where to look for jobs and what to expect from different types of jobs. I am well aware of the need because I was one of those students with no background in Ornamental Horticulture.

I started college majoring in Industrial Technology and never decided to major in Ornamental Horticulture until the end of my sophomore year. Counseling played an important part in my education and I feel I was well prepared as to what to expect from a job in this area.

I've found my education to be especially helpful in many areas. To a large extent it gave me the background knowledge needed. I have a wealth of notes and books to use as reference materials. With these resources, when failure does occur one can find out why faster and do better in the future.

Through my working experience I've learned many things that could not be taught in the classroom. Greenhouse construction, heating and ventilation, watering technique, scheduling work, and methods for propagating large numbers of cuttings are just a few. Through college education one learns what to do, but its on the job experience that teaches one how to do the job efficiently and well.

In summary, I feel that the university can offer the needed horticultural education. A well-prepared graduate should have a broad background in all phases of horticulture, some practical experience, and counseling on the types of jobs and what to expect.

HORTICULTURAL EDUCATION — DOES IT FALL SHORT OF THE MARK?

WAYNE LOVELACE

*Forrest Keeling Nursery
Elsberry, Missouri 63343*

It has been said there is no better method for resolving the world's problems than by talking them over in a genuine sincere spirit of frankness and open-mindedness. I'm not certain of the magnitude of our topic, but I do know that it is of great concern to educators, students, and nurserymen from coast to coast. There should be no better place to resolve some of these differences than in this unique gathering of educators, students, and nurserymen.

I am happy to have this opportunity to share and discuss my experience and research in the area of horticultural education. One finds this to be an area of major differences of opinions, not only between the educator, the student, and the nurseryman, but between associates within the respective fields.

The fact that we are assembled here points to the need for continuing education at all levels in a field that is moving at an unparalleled pace and becoming more technical and complex. This offers one of the greatest opportunities available to the horticultural graduate who is willing to enter the field and use his or her background of technical training in a college, university, or the equivalent as a foundation to build on. They must be willing to dig in and through diligent work learn the practical aspects of a varied and complex nursery business.

Due to the wide diversity of horticultural enterprises I'm convinced there is no practical way to develop a course or courses that can substitute for practical work experience in the field. Students of horticulture should never miss an opportunity to take advantage of work experience opportunities in their area of interest during their formal schooling. I personally believe it is extremely difficult for the student who has not been exposed to practical on-the-job experience to catch-up with one who has.

Having received practical work experience and learned to integrate his technical background with a practical approach, gained through experience, and an awareness that combining this background and experience with the basics that Mother Nature has provided, a student is well on his or her way to becoming a specialist and an asset to himself and the company he works for.

It is during this essential and critical period of commencement where most of the problems concerning horticultural graduates seem to emerge. Visiting employers in this field one finds a common pattern of experience. Far too many recently employed graduates become unhappy with their job, primarily because they feel the practical training they are receiving is at a level of responsibility below where they feel they should start, resulting in dissatisfaction and usually moving on to employment elsewhere.

This experience is often followed by the disappointed employer criticising the educational institution, while the student and institution have the same tendency to criticise the employer. When this occurs I'm convinced all three parties are at fault.

To gain better insight into this problem I would like to share some of the ideas and constructive criticism brought forth in meetings and discussions I have had with members of this Society.

A common criticism heard from nurserymen regarding graduates has been a lack of the basic inherent will to work. There

are many ideas as to where the will to work is instilled in an individual. Is it in the home, the secondary school, or elsewhere? After a good deal of soul searching and visiting I asked this question of our local Superintendent of Schools, an experienced and highly respected educator, and got what sounds to be an over-simplified answer, but as near the right one as I found. He feels for the past three or four generations of students the sole emphasis has been to get a good education and it will take care of you. As one generation of parents after another instills this goal of maximum education in their sons and daughters have we not come to accept education alone as an easy way out and a substitute for productivity?

Please don't take this statement as a slap at our educational system. I'm still convinced its the best system anywhere in the world with an excess of 80% of our youth receiving at least a high school diploma and with the doors of our public schools open to every citizen as long as he wants to pursue an education.

It's good to see our public schools coming to grips with these short-comings by instituting programs of career education and on-the-job work-study programs as a part of high school education. These programs have resulted in some excellent career employees in our nursery business. Although these work-study programs were originally patterned for the non-college bound student, we found a good number of our trainees have elected to go to college and expand their education in the field.

Another common area of misunderstanding among nurserymen, students, and educators involving employment and training periods concerns productivity. I feel that the first lesson that a trainee must understand is that the duties he is performing must directly or indirectly contribute to the profitability of the business enterprise. Very few nurseries are large enough to justify actual direct instructional type training as many tend to think of a training program. This should be clearly understood between the student and the employer as they prepare to begin their career.

Ultimately in a discussion of this type salary becomes a point of *some controversy*. I think *one of the real advantages of the nursery industry* is its basic make-up of small companies. An individual that is producing, stands out very tall in a small company; likewise a non-producer can hurt the typical-sized nursery operation. I do not believe most nurserymen employing a graduate for future areas of specialization or responsibility expect to get an immediate return on his or her efforts but we all have hopes of seeing that individual progress rapidly to a point where the company is realizing a return on these efforts. When this progress has been recognized the graduates should expect to see their knowledge, experience, and work return them a salary that is commensurate to their contributions to the profitability of the company.

Further discussions reveal that many graduates lack basic business concepts. Some graduates were cited as believing the typical nursery, with such handsome mark-ups and good demand for their products, could afford salaries well in excess of what they were currently paying. My best answer to this argument is that I know of no nursery operation that has escaped the ever present cost-price squeeze. A current example confirming that the nursery business is indeed a part of the free enterprise system is the current selling of certain lines of top quality nursery stock at or below the cost of production. Not to elaborate too long on this point, it should be noted in recent years we have seen outside interest, or big business as some prefer to call them, look towards the nursery industry as possible acquisitions. I personally know of more than one top, well established, and well managed company that was approached, and then saw offers withdrawn after an investigation of their profit potential. Make no mistake, the nursery business is a solid, sound, viable segment of our economy and one that pays just returns, but it should be held in proper perspective when discussing our topic of education.

In summarizing, I feel primary emphasis should go to the areas of practical nursery experience to compliment the excellent technical and scientific background horticultural students are currently receiving. As we see the added numbers of students currently looking towards the nursery industry for employment we will have an unprecedented opportunity to draw on the skills and expertise of trained horticulturalists. To capitalize on this opportunity we must approach it with a sincere and frank determination to resolve the problems that exist.

HUGH STEAVENSON: Jolly Batcheller has asked to make a few remarks concerning the educational program at the California State Polytechnic University.

JOLLY BATCHELLER: At the Pomona campus we have 20,000 sq. ft. of glass and polyhouses, half of which was built by students. We have approximately 20,000 sq. ft. of shade, half of which was built by students and we have 2 acres of container nursery stock. Our budget from the state to maintain this for a year is \$8,000 plus \$6,000 for expenses, but we sell \$45,000 worth of plant materials at retail prices or higher. The nurserymen objected to this at first but there is not a week goes by but they are asking us for trained people who know how to propagate, grow and sell, and it is through these methods that we train students for them. We sell at the nursery only on Fridays from 1 to 5 p.m. We'll sell wholesale if we have excess material but we cannot sell all of it because we have a large faculty and student clientele. We have 11 instructors and 1 technician. Out of the \$45,000 worth of material we sell we employ 15 students a month to care for the crops. We get an average of 50 to 75

volunteer-hours a month from students who want to be where the action is. We put in our fertilizer injection system, our spaghetti watering system and are about up-to-date on most modern methods; these have all been put in with student help. By having the money available from plant sales in a Foundation, we can adopt new methods which are being taken up in the industry and don't have to go through making up a budget as much as three years in advance. I say the students want to be where the action is and if you have action you'll have the students.

BRYSON JAMES: Paul Smeal was indicating that we are on target, but I believe that whether or not we're on target depends upon who draws the target. I think we fall short of the target any time we limit that target to uncommercial competence from a student coming out of the university. Just because they have a degree does not mean they are horticulturally educated. I believe the universities are too antiquated in the way they do things. We are in an area of "degreeism" and a degree cannot be equated with education. I spent 3 years in Kent, England and was very impressed with their methods of determining competence which is by a qualifying exam. There the student does not necessarily have to go and attend class; if he can educate himself and pass the qualifying exam this is satisfactory but he must pass the qualifying exams. I think we need to go to a system similar to this here in this country.

JACK SIEBENTHALER: On the television we're constantly being bombarded with the slogan that "A mind is a terrible thing to waste" and one of the speakers commented about the terrible waste which occurred when the modern math system was introduced in our schools. There is a failure on the part of the educators to teach the students to read and write. The education system at the university level should be looked at as a three-way street. We have the educators who are responsible for the program of education, we have the students who must bear their end of the responsibility, and we have the potential employers who should bear some share of responsibility in making sure the students are being taught those things which they need in order to function successfully in their chosen line of work. Employers are often guilty of not taking advantage of the capabilities of the students which they employ, especially the student who is taking a position with him to learn about the industry he intends going into. I think we as employers need to look inward to where we may fail the student. We talk about a need for expanded practical experience during the education process and yet when many of us employ students we often fail to give them a broad base of experience, frequently shunting them off to menial tasks. I will admit it's often a bother to keep up with these people but I feel as employers we are tremendously neglectful when we do this.

JIM WELLS: We have been involved in teaching students for some time now. The English system which Bryson James referred to

is discussed by Dick Martyr in Vol. 24 of IPPS Proceedings. It is referred to as a "sandwich course" and requires that a student already have one year of practical experience in horticulture before he contemplates college. It is assumed that he has graduated from some high school; if not he can take night courses to satisfy this requirement. He spends one full year at the college being taught horticultural subjects, not American literature or art appreciation, but horticulture. At the end of that year he is placed on an approved nursery for a full year of work at the current minimum wage and he must satisfy the employer for that year. He must report back to the college, I believe monthly, as to what he is doing and he must also develop an annual project which he completes during his annual year and he writes a report upon it. He then goes back to college for another year of training in horticultural subjects and if he satisfactorily completes this he is given the ordinary National Diploma in Horticulture.

We have been chosen as a nursery where students can be placed for their second year of training from the Pershore University and we take these responsibilities very seriously. I feel our previous speaker was correct in that one of our big problems is that few of us have taken the trouble to teach people. We do this very assiduously; we will stop work and show all of the students something that is particularly interesting. — they will be brought in from whatever they are doing at my request so that they can see what is being taught. In addition, I teach them by weekly discussions throughout the year and once a month we'll take them to a place of horticultural interest on a Saturday. This is fairly demanding upon us, the company, but we feel it is worthwhile.

I've heard a lot about practical and on-the-job training recently; there is a word for this — it is "apprenticeship." Years ago a father would pay a successful nurseryman to apprentice his son to him for 4 years to learn the nursery business. This whole concept has been lost sight of; people gladly pay to go to college to get academic training but then he still has to come out and learn the practical horticulture. I feel that all of what we have heard today about education is designed to train chiefs and I would like to see a method of training the forgotten indians.