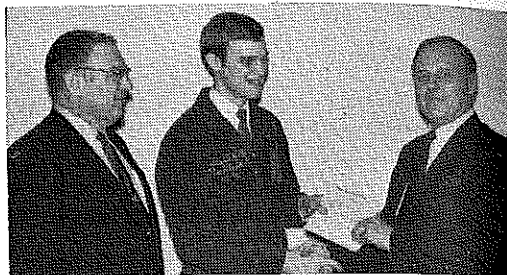
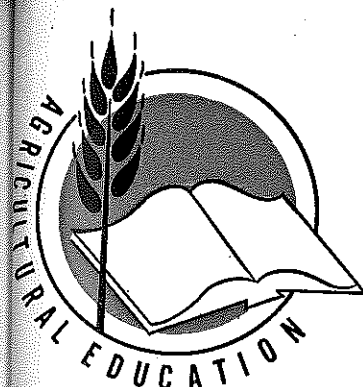


Discussing vocational education legislation during the 1970 Central States Seminar in Agricultural Education held at the Sherman House in Chicago are (left to right) Congressman Albert H. Quie of Minnesota; Edwin St. John, Michigan; Edgar A. Persons, University of Minnesota; and Gene M. Love, University of Missouri. (Photo by Curtis R. Weston, University of Missouri)



National FFA President, Harry Birdwell, receives a check for \$10,000 for the FFA Foundation from Paul Herewagon (right) of the General Motors Corporation. D. N. McDowell, Executive Director of the FFA Foundation Sponsoring Committee, observes. The presentation was made during the Central States Seminar in Agricultural Education held in Chicago, February 1970. (Photo by Curtis A. Weston, University of Missouri)



Volume 43

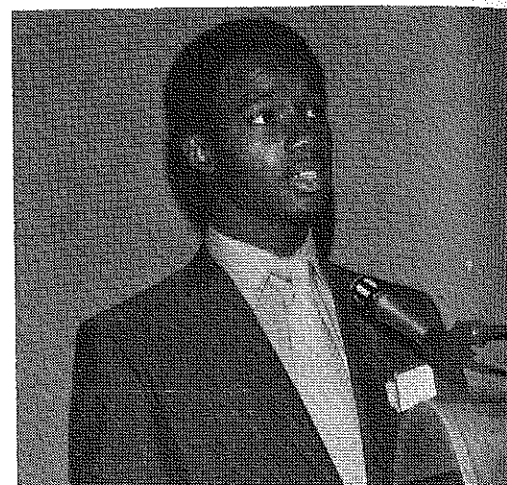
Agricultural Education

July, 1970

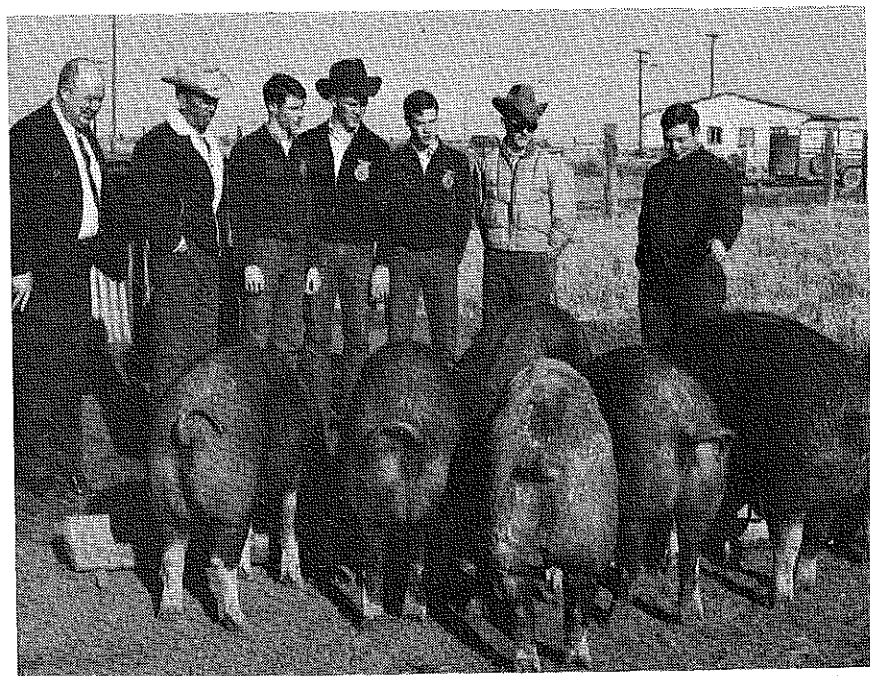
Number 1

Stories in Pictures

ROBERT W. WALKER
University of Illinois



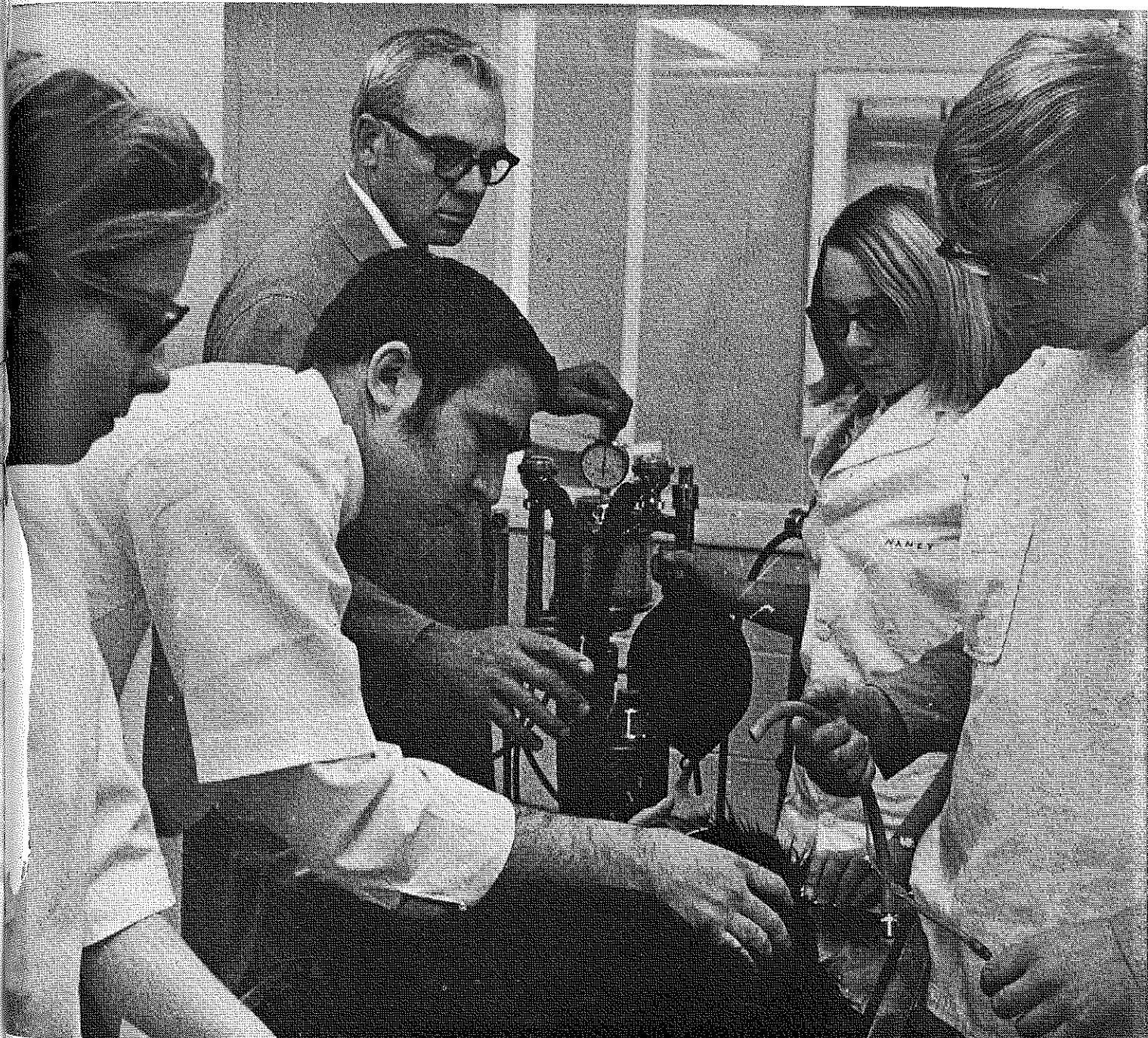
Lester Williams, student teacher from Prairie View A&M College, Texas, presides at the Eighteenth Annual Conference of Student Teachers held during the National FFA Convention in Kansas City, October 1969. (Photo by Robert W. Walker, University of Illinois)



The Superintendent, a board member, the teacher of agriculture, and vocational agriculture students at Dora Schools, New Mexico, observe a student's swine enterprise during an evaluation of the farming programs of the Dora Vocational Agriculture Department. (Photo by L. C. Dalton, New Mexico)



A display of misused tools helps Loren Whitmore, Vocational Agriculture Teacher at Haxtun, Colorado, teach proper care and use of tools. (Photo by Paul Foster, Colorado)



Featuring —

AGRICULTURAL EDUCATION IN POST-SECONDARY SCHOOLS

THE AGRICULTURAL EDUCATION

MAGAZINE

Vol. 43 July, 1970 No. 1

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Editorials

From the Editor . . .

The "Vo-Ag" Model and Post-Secondary Programs



J. Robert Warmbrod

The term "vocational agriculture," up to about the middle of the last decade, was a reasonably accurate and complete description of public education in agriculture in the United States, exclusive of instruction in agriculture in four-year colleges and universities. To those of us in the profession, vocational agriculture denotes an educational program characterized by some rather distinct features.

First and foremost, it is the designation of an educational program conducted in the secondary schools. Other distinctive earmarks include active and direct supervision of local programs by personnel in state departments of education, a corps of degree-holding, professionally prepared teachers, continuing inservice teacher education, a high regard for supervised occupational experience as a part of the educational program, an active and well-organized intracurricular students' organization, and

a strong professional organization for teachers. There can be little doubt that these features are major ingredients contributing to the success of secondary school vocational agriculture. In effect, these distinctive traits tend to become the model or pattern for new programs of agricultural education.

In contrast, "vocational agriculture" has not usually denoted agricultural education in non-baccalaureate degree granting post-secondary institutions even though agricultural instruction was offered in some of these schools prior to the rapid expansion of technical education in agriculture during the past five years or so. Post-secondary technical education in community colleges, junior colleges, and area vocational-technical schools is the most rapidly developing phase of agricultural education today. Many of the basic hallmarks of vocational agriculture hold for post-secondary technical education; however, we should not take for granted that agricultural education in post-secondary schools will, or should, parrot all features of the secondary school model.

One feature of the model which cannot be transferred
(Continued on next page)

Guest Editorial . . .

Articulation: A Responsibility and a Challenge



Paul E. Hemp

Community and junior colleges which offer vocational and technical education in agriculture have more than a passing concern with articulation problems. Since these institutions offer "transfer" courses in addition to career-oriented courses, they must develop an articulation program with four-year institutions. Equally important is the articulation that should be developed between post-secondary programs in agriculture and the vocational agriculture programs in secondary schools. No post-secondary program can survive the scrutiny of vocational educators and employers unless it is articulated with the demands and needs of the business world.

We have not paid enough attention to the real articulation problems which face educational institutions at various

levels. For many students the two-year community college is a link between high school and the world of work or between high school and a senior college. In Illinois, more than 45 percent of the high school agriculture graduates go on to college. This percentage will probably increase as jobs become more sophisticated and educational opportunities are extended to more persons. At the same time, efforts to offer occupational information and orientation at the K-8 level are increasing. In the future, occupational orientation and preparation will encompass the elementary, secondary and post-secondary years.

How can educational programs be effectively coordinated so that maximum learning can be achieved? What should be the unique functions of agricultural education at the elementary level? How can the administrative, guidance, and placement functions be articulated to achieve learning efficiency? These questions will have to be raised and answered at faculty meetings, teacher workshops, and educational conferences. One thing we know for sure is that problems of articulation will not be solved unless the avenues of communication are kept open and used. Articulation

(Continued on next page)

From the Editor . . .

completely to post-secondary agricultural education is the supervisory role of personnel in state departments of education. It is not uncommon for post-secondary institutions, particularly community colleges and junior colleges, to be aligned with or a part of a state's system of higher education rather than being an upward extension of the secondary schools. In these cases, a state's board of higher education or board of regents, not the state department of education, is the governmental agency with jurisdiction over post-secondary schools. An interesting dimension of this movement for agricultural educators is the establishment in several states of post-secondary technical schools as a part of colleges of agriculture in land-grant institutions.

When post-secondary schools align themselves with higher education, they often have traditions and points-of-view about program development, qualifications of faculty, and the use of outside resources that are substantially different from comparable tenets of the vocational agriculture model which evolved from a secondary school setting. Post-secondary schools aligned with higher education are more autonomous in orientation and operation. Hence, administrators and faculty of technical agriculture in these institutions may be reluctant to seek, or accept, advice and regulation from supervisory personnel who are closely identified with secondary school programs. It is almost axiomatic that the vocational agriculture model for state-level supervision cannot be applied intact to technical education in agriculture in post-secondary schools.

Neither can we assume a priori that the vocational agriculture model for preservice and inservice teacher education is applicable, without modification, to post-secondary schools. As post-secondary teacher education programs are developed, one tradition of higher education that must be noted is the point-of-view that more readily acknowledges the necessity of an instructor's knowledge of subject matter than it recognizes the prerequisite of pedagogical competence. A related problem is the extent to which instructors who do not hold baccalaureate or higher degrees will be sought and used in post-secondary institutions closely aligned with higher education.

Also apropos are questions pertaining to a professional organization of post-secondary teachers. Can one professional teachers' organization serve effectively both secondary and post-secondary teachers? Are post-secondary teachers interested in and concerned about the same professional problems as high school teachers? Are teachers of technical education in agriculture interested in becoming members of a professional organization which has "vocational" in its title? These are some of the questions facing leaders of state and national professional organizations of teachers.

Another facet of the vocational agriculture model which should be examined closely before being imposed unwarrantably on post-secondary agricultural education is a national students' organization. A recent news release announcing the realignment of responsibilities of the national FFA staff indicates that the National FFA Executive Secretary "will assume the task of developing and promoting an organization for post-secondary agriculture students in area vocational schools, junior colleges and community colleges."

An apparent assumption is that such an organization is wanted and needed. It is imperative that the profession examine critically the need for a national FFA-type organization for post-secondary students.

We must restrain from arbitrarily imposing features of the vocational agriculture model on post-secondary agricultural education simply because the model is successful in secondary schools. Perhaps a new mold needs to be cast for the post-secondary model of agricultural education.

—JRW

Guest Editorial . . .

problems will not be satisfactorily solved by one group imposing its biases on another group.

Teachers of agriculture at the secondary and post-secondary levels should not isolate themselves from each other. They must understand, appreciate and respect what each group is doing. A coordinated plan for vocational education in agriculture must be developed so that appropriate behavioral objectives can be accomplished at each level of learning. The elementary school should teach those things which young children are ready and able to learn. The secondary school should continue where the elementary school leaves off and promote the vocational development of youth with the resources and facilities that can be utilized. The community college has unique functions and capabilities. Technical education is usually considered to be a function of post-secondary institutions just as professional education is considered to be a function of the four-year college or university. Articulation efforts might be pushed ahead considerably if schools could define in behavioral terms what their graduates had learned. If performance levels can be identified, it will be much easier for teachers to mesh their programs with lower level programs and for counselors and administrators to place students in appropriate courses.

Articulation of school programs has always been a problem. Two-year colleges are especially concerned about coordination because they serve students from high schools and pass their graduates on to senior institutions or the job market. The best hope for a workable solution to the articulation problem lies in the professional relationship and interaction which can be practiced as teachers of agriculture from various levels work together.

THE COVER PICTURE

Second-year students in Veterinary Technology at the University of Nebraska School of Technical Agriculture, Curtis, Nebraska, learn the techniques involved with proper anesthesia of an animal for surgery. An article in this issue describes the School's entire program of agricultural technology. (Photo supplied by Gerald J. Huntwork)

Land-Grant University Provides Technical Education in Agriculture

GERALD J. HUNTWORK
University of Nebraska School of Technical Agriculture
Curtis, Nebraska

PURPOSES

The University of Nebraska School of Technical Agriculture, a vocational-technical wing of the University of Nebraska College of Agriculture and Home Economics, is an outgrowth of the University of Nebraska School of Agriculture which was a comprehensive four-year boarding high school established in 1911. The University of Nebraska School of Agriculture operated on a campus consisting of 390 acres from 1911 to 1965.

In 1965 the first class of the University of Nebraska School of Technical Agriculture began. The two schools shared the same campus from October 1965 until May 1968 at which time the School of Agriculture was phased out. The transition from a high school to a post-high school institution was very successful with optimum utilization of staff and facilities. As the high school enrollment declined the technical school enrollment increased at a steady rate.

The University of Nebraska School of Technical Agriculture is devoted exclusively to post-high school technical education in agriculture. The school began in October 1965 with two programs of instruction and 33 students. By the fall of 1969 there were six instructional programs with an enrollment of 240 students. Projections for the future are that the school will have an enrollment of 800 students in seven programs of instruction by 1980.

The purposes of the instructional programs are two-fold:

—To prepare students for employment in an agricultural trade or technical job with enough education not only to be successful in the initial job but also to be able to grow and develop on the job.

—To furnish students, in addition to occupational skills and technical knowledge, education needed to be an effective citizen.



Gerald J. Huntwork

Gerald J. Huntwork is Assistant Superintendent, University of Nebraska School of Technical Agriculture, Curtis, Nebraska.

Students must be at least 16 years of age and mentally and physically capable of benefiting from the instruction offered. This is determined by aptitude tests administered soon after the beginning of the school year and by a trial period of instruction. A high school education or the equivalent is desirable for entrance. The basic philosophy at the University of Nebraska School of Technical Agriculture is to help each student achieve maximum development within the range of his potentialities, both as an individual and as a member of society.

SCHEDULE

The full instructional period for each of the six programs offered covers twenty-one months divided into seven quarters. Six quarters are on campus and one quarter involves work-experience.

The instructional program must evolve around the normal farming and ranching calendar. This is necessary to insure application of instruction. Field laboratories are set up and in operation during the growing season. In

(Continued on next page)



Commercial Horticulture Technology students examine a plant in the School's nursery.

Land-Grant University Provides Technical Education in Agriculture

(Continued from page 5)

order to maintain a sequence of courses which fit into this overall program, new students are accepted in October each year. Students attend courses on campus for two quarters. The third quarter (April to July) students participate in work-experience. Students spend the fourth through the seventh quarters on campus.

During the third quarter students are required to take full-time employment with an approved employer. Work-experience stations are located throughout the state. Employers pay the standard hourly rate for the type of work being done. The program is supervised by instructors from the School of Technical Agriculture. The objective of the work-experience program is to help develop close coordination between the educational experience at school and the actual on-the-job situation. In the production agriculture technology program students are permitted to fulfill the work-experience requirement on their home or ranch. However, these students like the students in all programs are supervised by personnel from the school during work-experience.

PROGRAMS

The following programs of instruction are offered. Included with each program is a list of some of the employment opportunities available to graduates completing the program.

Agricultural Business Technology: bookkeeper, salesman, assistant or

manager in feed, seed, chemical and fertilizer store, grain elevator, coop, farm equipment dealership, or lumber yard; partsman for farm equipment dealer; farm loan assistant; agricultural business assistant or manager; mid-management position in agricultural retailing, wholesale, or distribution firm.

Agricultural Conservation and Civil Engineering Technology: conservation or engineering aide for Soil Conservation Service, Bureau of Reclamation, Department of Roads, and similar agencies; farm building draftsman for lumber yard, building materials dealer, or contractor; soil and materials testing for Department of Roads or private testing laboratories; draftsman and surveyor for conservation contractors, consulting engineers, or irrigation firms; farm operator versed in latest soil and water conservation practices.

Agricultural Machinery Mechanics Technology: mechanic or mechanic's helper for farm equipment dealer; salesman or partsman for farm equipment dealer; maintenance of equipment on own farm or ranch; owner of farm equipment repair shop.

Commercial Horticulture Technology: greenhouse grower or propagator; nursery operator or assistant; turf or golf course specialist; garden center manager or assistant; landscape technician; landscaping foreman or superintendent; park superintendent or assistant; forestry service.

Production Agriculture Technology: manager and operator of own ranch or farm; herdsman for livestock producer; manager or assistant manager for commercial feed lot; farm or ranch foreman or assistant foreman; job with ag-related industry.

Veterinary Technology: veterinary assistant; city, state, and federal animal health agencies; research and development for government and private industry.

Each program of instruction trains for a cluster of occupations. This insures flexibility of employment opportunities.

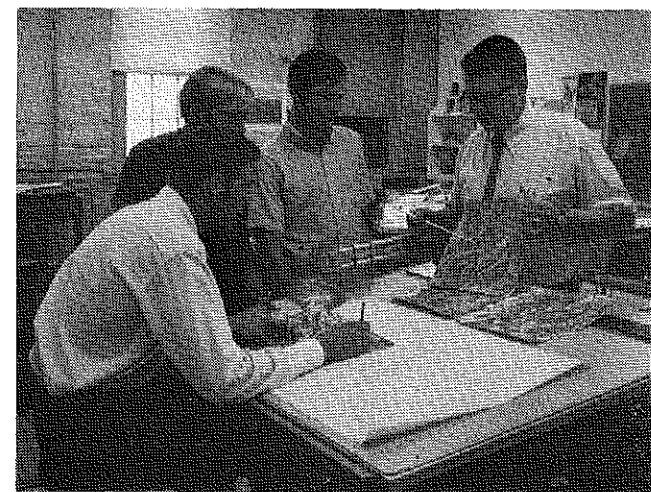
ADVANTAGES

All programs were established through the joint efforts of specific advisory committees and school personnel. The overall operation of the school is under the suggestive guidance of a General Advisory Council. The individual program advisory committees and the school's General Advisory Council meet annually to assist in updating instructional programs.

We feel that being a school totally devoted to agriculture is a definite advantage. With a major objective of instruction in agriculture, we have been able to coordinate instructional programs and utilize instructors in speciality areas. Equipment and facilities are also utilized by more than one instructional program.

Being a part of the University of Nebraska is also an advantage. We continually utilize staff members and personnel from the College of Agriculture and Home Economics and the University of Nebraska Experiment Stations as resource persons in specific instructional areas. Our students also gain the prestige of being a student of the University of Nebraska.

The School of Technical Agriculture is located 240 miles from the University of Nebraska campus near a small town with a population of 800 people. It is interesting to note that many students select our school because of the small town atmosphere. Approximately 90 percent of our students come from small communities with populations of less than 1,000.



Students in Agricultural Conservation and Civil Engineering Technology use aerial photographs and the stereoscope in plotting topographic details.

A State Organization for Post-Secondary Students

R. J. AGAN, Teacher Education
Kansas State University



R. J. Agan

A national organization for students in post-secondary agricultural education? Kansas teachers and students of this segment of agricultural education recently voted "yes" when they organized the Kansas Agribusiness Student Association to serve students in post-secondary programs in the State. Their hope is that other states will form organizations for post-secondary agricultural education students. Eventually, a national association may be formed.

New Organization

On March 14, 1970, seventeen post-secondary students, thirteen instructors, and seven state, regional and national consultants in agricultural education met in Topeka, Kansas, in a meeting which was something of the size, nature, and enthusiasm of the first FFA convention in Kansas City. The students represented four junior and community colleges and four area vocational-technical schools, all with programs in agriculture. Each school

was allowed two voting delegates and as many participants as desired. The primary purpose of the meeting was to investigate the possibility and potential of a state organization or some type of state activities which might be of benefit to post-secondary students.

After several hours of discussion, the students decided to form a state organization for students enrolled in post-secondary agricultural programs in junior and community colleges and in area vocational-technical schools. Temporary officers were elected and a board was designated to develop the details of a constitution. Harold Shoaf and Earl Wineinger of the Kansas Supervisory Staff in Agricultural Education were elected as coordinators (advisors) of the state organization. The official board met on April 4, 1970, to adopt a name and develop a constitution for the organization.

Operation

The Kansas Agribusiness Student Association will be an organization more complex than the state FFA Association. There will need to be formed special affiliations within chapters by speciality areas. There will be local

chapters made up largely of students interested in specialized fields such as horticulture, agricultural mechanics, feed technology, and others.

The local chapter programs will be handicapped somewhat by a two-year program, since most of the post-secondary programs are two years or less in duration. There will be, however, a great potential for post-secondary chapters in that they will have among their membership graduates of high school vocational agriculture programs. This experience, coupled with maturity of students, will assist materially in program planning and the development of activities appropriate for post-secondary students.

The Kansas Agribusiness Student Association will have an annual state meeting. Each chapter will be permitted two official delegates. If the post-secondary program has two areas of specialization, there should be one delegate from each speciality area.

Only time can tell whether the formation of the Kansas Agribusiness Student Association is the beginning of a national organization for post-secondary students in agricultural education. From the Kansas viewpoint, it looks desirable.



Post-secondary students and instructors in Kansas met in Topeka on March 14, 1970, to form the Kansas Agribusiness Student Organization. Neville Hunsicker and Byron Rauls of the U.S. Office of Education attended the organizational meeting. (Photo by Earl Wineinger)

Development of a Post-Secondary Program for Animal Technicians

D. W. SCHEID
Madison (Wisconsin) Area Technical College

As veterinarians prepare for their profession with a high degree of knowledge and skill, they find their practices expanding in both number and kind of animals. The 1968-69 edition of the *Occupational Outlook Handbook* states that "although an increase in the demand for veterinary services is anticipated in the years ahead, the number of veterinarians will be restricted by the limited capacity of schools of veterinary medicine." It is estimated that the demand for veterinarians will far exceed the supply during the 1965-75 decade. The Handbook states that there are only eighteen colleges of veterinary medicine in the United States.

Among the factors underlying the increasing need for veterinary services are an increase in the number of livestock and poultry required to feed an expanding population, a growing pet population resulting from a trend toward suburban living, and an increase in veterinary research. Emphasis on scientific methods of raising and breeding livestock and poultry and the growth in domestic and international public health and disease-control programs also add to the opportunities for veterinarians.

• Need for Animal Technicians

These facts have brought the conclusion that some of the tasks normally performed by a veterinarian could be performed by an animal technician working under the direct supervision of a licensed veterinarian. Such tasks might include laboratory work, animal care and grooming, restraint, office practices, and preparing for and taking certain tests. This would help to reduce the veterinarian's work load and allow him to do a more thorough job with other tasks.

The impact of the demand for people to assist veterinarians has been of vital concern to the American Veterinary

Medical Association. They considered the training of assistants (animal technicians) in depth and approved a policy for implementing such training programs in 1967. Their guidelines require that a State Advisory Committee be established to assist and advise school authorities in planning, organizing, and conducting programs which meet prescribed standards.

In October 1968, the Wisconsin Veterinary Medical Association Education Committee called a meeting for the purpose of exploring the educational needs at a sub-professional level in the field of veterinary medicine. Present, in addition to members of the Wisconsin Veterinary Medical Association, were representatives of the Wisconsin Board of Vocational, Technical and Adult Education.

The purpose of the meeting was to obtain background information regarding the need for the training of sub-professional personnel to be of assistance to the veterinary profession in practice, diagnostic laboratories, research laboratories, laboratory animal care units, and related industries. The Wisconsin Veterinary Medical Association had been asked to advise the Wisconsin Board of Vocational, Technical and Adult Education regarding the need for such training and the support that could be expected. Support by the veterinary medical profession is of primary importance for this type of program.

• Manpower Needs

The results of a survey conducted by the American Veterinary Medical Association concerning manpower needs, occupational definitions, and licensure of Animal Technicians and Attendants were presented at this meeting. The summary indicated that there were 47 respondents from Wisconsin with a majority favoring the development of



D. W. Scheid

D. W. Scheid is Chairman of the Agriculture Division, Madison Area Technical College, Madison, Wisconsin.

a training program. It was decided that a more comprehensive survey should be conducted with the veterinarians in Wisconsin.

A State Advisory Committee of twelve veterinarians was appointed to work with the State Board of Vocational, Technical and Adult Education to establish standards for such a program and to determine if a need existed. Following preliminary studies, the construction of standards, and making equipment lists, a questionnaire was sent to 492 Wisconsin veterinarians who were members of the Wisconsin Veterinary Medical Association. A summary of the questionnaire results showed that 64 percent of those returning the survey supported an animal technician training program. Fifty-nine of the Wisconsin veterinarians said they would be interested in employing at least one trained animal technician; another seventeen said they possibly would be interested in employing a technician. One hundred and three of those who responded said they had already employed one or more untrained non-professionals in their practice during the last five years; 56 of these had hired three or more persons. A prediction of salaries for animal technicians was estimated to be a little over \$460 per month.

(Continued on next page)

Agricultural Banking — A New Post-Secondary Program

MARVIN L. THOMSEN, Director
Pipestone Area Vocational School
Pipestone, Minnesota



A recent graduate of the Agricultural Banking program at Pipestone Area Vocational School is shown at his desk in the Installment Loan Department of a bank.

An Agricultural Banking program in an area vocational school?

The banking industry was suggested as we searched for an industry where the untapped potential of the youth of rural Minnesota could be utilized to great advantage. After making surveys to determine the need for trained personnel in the banks of the state, Agricultural Banking was suggested as the title of the program. At this time, it is the only Agricultural Banking program in the Midwest, perhaps in the entire nation.

Courses

Agricultural Banking is a two-year course consisting of sixteen months of classroom instruction and a period of six months supervised training in a bank. Classroom instruction includes American Institute of Banking courses

such as principles of bank operations, installment credit, agricultural credit, bank management, and accounting. Farm management and production courses in all phases of farming and livestock raising make up about half of the classroom instruction. Also included in the curriculum are courses in insurance relating to farming, business law, business mathematics, communications, and human relations. Before beginning the supervised experience phase, students are given an intensive two weeks of teller training.

The program has developed through close cooperation with an advisory committee made up of area bankers and the instructors of the Agricultural Banking program. O. E. Olson, a graduate of Mankato State who has broad experience in banking and insurance, teaches those areas of the program.

F. G. Ray, a South Dakota State University graduate and former rancher and farmer, teaches the agriculturally related courses.

Graduates

Agricultural representatives are badly needed in more than 500 country banks in Minnesota. The first graduates of the program are now employed in banks throughout southwestern Minnesota. Although they were trained primarily as agricultural representatives, some graduates will find the insurance field or installment lending more to their liking.

Development of a Post-Secondary Program for Animal Technicians

(Continued from page 8)

Following this and other study, the Wisconsin Advisory Committee recommended that a training center for this program be established. The proposal for an animal technician program submitted by the Madison Area Technical College was approved in February 1970. At the time this article was written, student applications have been processed for the animal technician training program which will begin in September 1970.

• The Program

Animal technician training at Madison Area Technical College will be a two-year associate degree program under the direction of an experienced graduate veterinarian holding a Wisconsin practice license. Objectives of the program are to develop skills in reception and record keeping, restraint of animals for examination and treat-

ment, X-ray and operating room techniques, medication, feeding, and maintaining proper sanitation; to develop proficiency in performing certain laboratory tests incident to the diagnosis and proper care of domestic animals; and to develop understanding of the importance of effective communication and its application to proper public relations.

There are four semesters of study in the program. Summer internship follows the second semester. Courses in the program include communication skills, biology, chemistry, animal husbandry and nutrition, applied mathematics and algebra, animal restraint, zoonosis, psychology of human relations, laboratory techniques, American institutions, animal anatomy and physiology, veterinary operating room techniques, hospital supply and medicants, clinical and hospital techniques, ac-

counting, economics, and office practices and public relations. Students who qualify may elect some college transfer courses.

• Opportunities

Men and women with specialized training are in great demand for the rapidly growing animal technician career field. Very few persons with formal education in this field are available. Veterinarians, producers of laboratory animals, research institutions, medical centers, pharmaceutical manufacturers, and others need specially trained people to care for animals and to perform laboratory and clerical tasks.

It is expected that students graduating from this curriculum will gain rapid advancement. This new branch of animal science should provide students with interesting, rewarding, and challenging careers.

Post-Secondary Technical Education in Forestry

MELVIN E. JENKINS
University of New Hampshire

In the late 1950's there was a general ground swell of opinion and concern regarding the achievement of greater breadth and depth in forestry education in the United States. The fact that baccalaureate-level programs were moving somewhat away from practical field methods led to the development of post-secondary technical education programs in forestry.

Technical Education

Timber production generally is considered to be the major objective of a number of schools developing two-year technical programs in the forest resource field. In 1968, the Society of American Foresters listed 38 one- or two-year forest technician programs in forest resource fields and 22 more under serious consideration. In 1964, the Society only listed five forest technician programs with eight to eleven additional programs being considered.

The Thompson School of Applied Science, the two-year division of the College of Life Sciences and Agriculture at the University of New Hampshire, established a two-year technical program for forest technicians in 1961. The program is essentially terminal in nature.

The technician must be capable of working and communicating directly with forest engineers, foresters, sci-

entists, and production personnel. The technician must satisfactorily perform in his work and show the potential for growing into positions of increasing responsibility. In addition, the forest technician should be an active, well-informed member of the community and society.

Students

The effectiveness of any technical forestry education program depends to a great extent upon the quality of the students admitted. It is essential that the students accepted be relatively equal in academic ability. Rank in high school graduating class is one of the most reliable predictive devices. Standardized achievement, aptitude, and interest tests should be used, with discretion, to supplement information from high school records.

Our experience indicates that a student who expects to become well qualified and successful should have begun preparation for his career well in advance of application with units of mathematics and a unit of either chemistry, biology, or physics. The student who has done this is in a position to understand more fully the subject matter.

A second desirable trait, although not generally necessary for entrance, is the ability to read and write constructively for much of the field analysis is in the form of written reports. These reports frequently form the basis for grades and for promotion during a career. Physical stamina and a definite enjoyment of outdoor employment are essential for a forest technician for much of the work is done under adverse weather conditions.

Each student is given a thorough understanding of his role and the possible objectives and directions available to him by the staff who reserve a great deal of time for this function.

The student is made to feel as much a part of the "family" as is possible to do by individual counseling sessions and our open-door counseling policy. In addition to the policy of open counseling, we offer a seminar course which is very well received by freshmen. This course is conducted as a discussion in which group career counseling is accomplished. Students are encouraged to ask about college life, transfer policies to four-year college programs, and study habits as well as career possibilities.

Curriculum

The forest technician curriculum is designed to provide a balance between technical, technical related, and social science courses. The courses offered each semester are indicated on the accompanying chart.

Functional competence in the field of forestry has three main components around which a curriculum must be structured: the training must be such that the graduate will be able to function productively in an entry position; technical training plus experience should enable the graduate to advance to positions of increased responsibility; and the base provided by the training must be broad enough so that the graduate can do further study as well as move laterally as career opportunities arise.

The sequence of the courses in a two-year technical curriculum is as important as the content of the courses, if the limited time available is to be used effectively. We have attempted to coordinate our program into groups of concurrent courses arranged to blend smoothly from one group of courses to the next. As can be noted from the list of courses, we offer more technical specialty courses in the third and fourth semesters. The reasons are obvious. The student has developed his

Courses for Forest Technicians

SEMESTER I

Elementary Forest Surveying
Communications Skills
Technical Mathematics
Dendrology-Ecology
Botany
Forest Orientation Seminar
Summer Program: Fourteen weeks of on-the-job work experience

SEMESTER II

Technical Reporting
Elementary Forest Measurements
Applied Silviculture
Technical Drawing
Elementary Business Management
Elective

SEMESTER III

Personnel Management
Forest Business Methods and Law
Timber Harvesting
Advanced Forest Surveying
Forest Recreation
Wood Properties and Identification
Elective

SEMESTER IV

Elements of Social Science
Forest Products Utilization
Forest Protection
Advanced Forest Measurements
Forest Photo Interpretation
Elective

Regional Forest Management Field Trip: Two weeks of field experience with forest industries.

career objectives and has passed over a period of trial thinking as to the feasibility of remaining in the forestry program. As a consequence of this factor, combined with his successfully having mastered the basics in the first year, the student is now ready for greater breadth and depth in the technical specialty.

Equipment and Facilities

We actively enlist the aid of forest industries in the form of resource speakers and the donation of certain types of equipment not normally owned by an institution which does not maintain a woods force. In 1963 we began developing a plan for the purchase of a sawmill to be used in training sawmill supervisors and to assist in the development of correct log bucking, scaling, and crusing techniques.

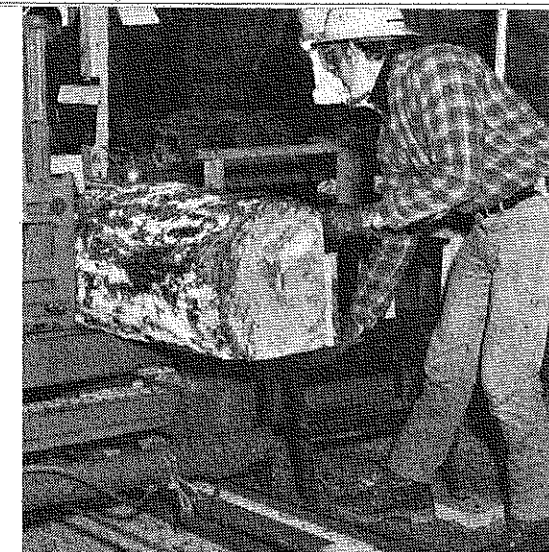
A complete 52" headsaw sawmill was donated by a commercial company for use in the training programs. We also lease a hydraulic log loader for logging operations. We are planning the construction of lumber forks so that this machinery can also be used in our milling program. Another company donates each year a rubber-tired skidder for use in the logging program.

The purpose of this equipment is not to make tractor operators or sawmill operators of our students but to provide up-to-date machinery for integrated operations and for discussions on the economics involved. Senior students use these major pieces of equipment in a program which appears to us to make good sense.

In the second semester the student marks a timber stand for cutting under prevailing market and silvicultural conditions. During the third semester he cuts the stand thereby discovering marking errors. Practicing correct techniques of felling, bucking, scaling and skidding gives him an appreciation of the performance he may expect of others once he is on the job. Log transportation gives him knowledge of the conditions under which a log becomes marginal, submarginal, or profitable after bucking.

In the fourth semester the student turns his attention to timber crusing, scaling, and sawmill techniques and utilization. The student has the opportunity to cruise timber to determine the standing volume one day and the next to see the logs opened at the sawmill to determine defect deduction. By this process the student is more able to determine accurately the actual mill volume which can be sawed from any stand volume or from a particular log. The post mortem examination of logs in the sawmill enables the student to tighten up his cruise techniques so that by the end of his fourth semester his cruise reports as well as his knowledge of utilization of lumber products is more comprehensive.

Admittedly these skill levels are oriented toward students who will enter private forest industry employment. However, experience indicates that these skills are desirable for those entering government employment as well.



Students in the Forest Technician Program saw logs to study defects and log grade recovery and to learn the operation of the sawmill.

Employment

Our office maintains contact with private and governmental forest industry representatives in order to assure students adequate contacts for employment. We feel that this function can best be handled by the forestry staff of the technical school rather than by a centralized placement bureau since the forestry staff is frequently in personal contact with representatives of the forest industry and is familiar with students' capabilities.

The forest technician has been successful in filling the gap, not only between the professional forester and the skilled woods worker, but has many times taken over the position of the skilled woods worker. As the mechanized harvesting phases of forestry are developed more fully, we are going to be increasingly looking for men with wider skills, better educational backgrounds, and with more ability in the acceptance of field responsibilities.

We believe that men with a broad background knowledge such as those having been trained in a technical program could be directed into a specific work area which gives more knowledge concerning the basic background procedures that go into making up a job. Associated with this would be the decrease in personnel turnover which is presently found in the woods labor force. The training we give students in technical education will enable them to look upon the job, not as a subsistence program, but as a career employment program.



Melvin E. Jenkins

Melvin E. Jenkins is Associate Professor and Supervisor, Forest Technology, Thompson School of Applied Science, University of New Hampshire, Durham.

Teacher Education for Technical Education in Agriculture

JERRY J. HALTERMAN, Director
Technical Institute of Agriculture
The Ohio State University

"Perhaps the most serious deterrent to the continued improvement and expansion of vocational and technical education is the growing shortage of well qualified teachers and other leadership personnel . . . the improvement and expansion of teacher education programs becomes an activity of highest priority in a period when employment opportunities will be brightest for those who possess sound occupational preparation."¹ This statement summarizes the situation currently encountered in the area of technical teacher education in agriculture.

Administrators and teacher educators agree that the current practice of selecting persons either from agriculture or from education and then assisting them through in-service programs to become proficient in the areas where deficiencies exist is perhaps the only alternative at this time. However, it is not a satisfactory answer to the problem on a continuing and long-range basis. As teacher educators, we must address ourselves to the task of developing formalized pre-service programs, although in-service programs will continue to be of great importance.

What educational qualifications are needed by the technical teacher? How does the technical teacher differ from persons prepared as vocational teachers? What changes are to be made in present teacher education programs in order that the needs of professional personnel in technical education can be met?

THE SETTING

The qualification of the technician is reflected in his preparation and competence in five categories — general education, mathematics, basic science and auxiliary supporting studies, technical specialization, and occupational placement for experience.

Upon completion of an educational program the technician should be able to apply the basic principles, concepts, and laws of science pertinent to his field of technology; apply mathematics as a tool in the development, definition or quantification of scientific principles according to the requirements of his technology; perform the required specialized services related to materials, processes, equipment, procedures, methods, and techniques; investigate technical problems using the scientific method of inquiry and observation; establish effective rapport with other professional and nonprofessional workers within his field of technology; and transmit and receive facts, ideas, and data objectively through oral, graphic and written communication.

Similarly, the qualification of teachers for this specialized field of endeavor is considered to be accomplished in the same manner with the exception that "professional education" is added as an essential element.

The role of the technical teacher educator is an ever-changing one. The current situation as well as new thrusts and emerging trends which we face in preparing these educational specialists provide a basis upon which the programs of the future can be predicted. Some of these elements which seem to have particular significance are summarized below.

In the broad area of education we see . . .

—The emergence of technical education on the educational spectrum as a full-fledged member, recognized by educators, legislators and employers alike.

—Dramatic explosions in knowledge calling for constant and continuous updating by both teachers and students of insights, skills, understandings, and values.

—An acknowledged shortage of technical teachers and the near absence of formal programs for the preparation of such.

—An increased demand for admission to post-secondary education, particularly to technical institutes and community colleges.

—The inclusion in the high school curriculums of pre-technical education.

—A change in emphasis from meeting the needs of the labor market to developing the individual student's potential.

—A postponement of specific occupational training.

—The development of parallel school systems, most especially the area vocational school.

—The emergence of the post-high school two-year programs as an effective means to bridge the gap between education and the world of work.

In terms of institutions and the students served we note . . .

—A change in the role of Colleges of Agriculture brought about by the changing structure of agriculture, the technological knowledge explosion, and the major organizational and curricular adjustments in other units of universities.

—An increasing number of highly qualified students completing specialized curriculums in area vocational schools and comprehensive high schools seeking admission to technical and professional schools.

—An increasing diversity in student's social origins, their abilities, and their life goals.

—A movement to admit students who do not have high school diplomas to post-secondary programs.

In the areas of educational media, processes, methodology, and personnel we observe . . .

—A multiplication of new media and technologies for recording, storing, retrieving, distributing and presenting material to students.

—New insights into areas of socio-psychological theory including the nature of human development, the learning process, and individual differences.

—A growing movement to bring teachers under closer scrutiny.

—The emergence of highly differentiated staffing systems including auxiliary support staff; interns; teacher aides; associate teachers; staff teachers; senior teachers; and master professional teachers.

—A preference on the part of administrators and teacher educators for technical teachers who have the following preparation: bachelor's degree in agricultural education, master's degree in area of specialization, and specialist's degree in agricultural education plus work experience in area of specialization and teaching experience in vocational agriculture.²

In the agricultural complex and its related agricultural manpower force we see . . .

—A decline in self-employment with the outgrowth that workers now must become sensitive to the demands made by agricultural business on its employees.

—Most workers in agriculture deployed not in the output of agricultural goods but in providing services and supplying goods to those engaged in agricultural production, processing, and marketing.

—Increased application of science to agriculture and the recognition of the bio-physical scientific base of agricultural technology.

—Increased mechanization and the application of the systems concept to agriculture.

—Business control and management of agricultural firms bringing about wide-spread movement in integration, both vertical and horizontal.

—The impact of integration stimulating specialization of services in production, processing, and marketing.

—A high incidence of job change emphasizing the importance of workers qualified to adapt and cope with change.

IMPLICATIONS

Implications derived from the foregoing and related elements which reflect the current situation and emerging trends provide a basis upon which a number of outcomes in technical teacher education can be predicted for the immediate future.

Selection and Recruitment of Teachers

Teachers will be recruited from widely diversified and varying backgrounds of experience and education. Since no single pattern will be prescribed in the manner in which to become qualified, teacher education programs will be flexible, adaptable, and variable to meet the changing needs.

The most important personal qualification of instructors continues to be teaching ability. Selection processes will provide for the identification of those who sincerely want to teach and who are highly competent technicians and challenged by and enthusiastic in their work.

Pre-Service Education

The professional education element of the pre-service program will focus upon the adult as a learner. Unique value perceptions, different motivational patterns, and an advanced level of maturity demand a unique approach to teaching.

Teachers will have occupational competency gained through full-time work experience as a technician.

The technical teacher will have completed advanced courses in an area of specialization and related supporting studies beyond the level required of students in the program he is preparing to teach.

The master's degree will be considered as an acceptable minimum stand-

ard of preparation for the technical teacher.

In order that both technical competency and professional skill might be developed and demonstrated, the technical teacher education program will provide for two supervised practicums: an educational internship in a clinical setting and an occupational intern experience.

An integrated sequence of professional courses will be offered to provide the prospective teacher with an understanding of the methods and problems associated with technical teaching.

Technical content for the prospective teacher will be integrated with science, mathematics, communications, and professional courses. Technical content is related as closely as practicable to its theoretical bases, with emphasis upon laboratory techniques and skills.

In-Service Education

The sureness and constancy of change reflects the need for continuous and regular up-grading and retraining by technical teachers. Incentives will be built into contracts to provide for released time, financial assistance to attend professional institutes and meetings, periodic leaves of absence, membership in professional and technical societies, attendance at national conferences, and the encouragement of research related to teaching.

¹Report of a National Seminar on "Vocational-Technical Teacher Education." The Center for Vocational and Technical Education, The Ohio State University, Columbus, Ohio, February, 1968.

²Cragan, John J. "Preferred Pattern of Preparation for Teachers of Technical Agriculture at the Post High School Level." Unpublished Ph.D. dissertation, Michigan State University, 1969.

Themes for Future Issues

August	Adult Education in Agriculture
September	FFA: Past—Present—Future
October	Ideas for Effective Teaching
November	Research in Agricultural Education
December	Innovations in Agricultural Education

POLITICAL ACTIVITIES OF STATE TEACHERS' ASSOCIATIONS

HERBERT SCHUMANN
Texas A and M University

Have you evaluated the legislative efforts of your state association recently? Our political awareness is of paramount importance today. Taxpayers are turning down bond issues at an ever-increasing rate. Concerned citizens are demanding economy in government. Legislators are heeding these demands and searching for ways to curtail governmental expenditures.

The importance of evaluating the effectiveness of endeavors by state vocational agriculture teachers' associations has recently become evident to those concerned with the future of vocational agricultural education. Developments in the U.S. Office of Education illustrate the importance of legislative efforts on the national scale. Many states are experiencing similar pressures to re-evaluate agricultural education.

Compared to other special interest groups, educators have not been very active in the political arena. As distasteful as it may seem to some, the survival of agricultural education depends on our political awareness.

Establishing Relationships

A strong and active local program of agricultural education is basic for establishing good relations with legislators. Perceptive legislators are attuned to the communities they represent. If the community has a favorable impression of the local program of vocational agriculture, an alert legislator will quickly become aware of it. Politically aware teachers invite legislators to FFA banquets, livestock shows, and other community-oriented agricultural education activities.

Teachers can favorably influence legislators in communications also. We usually contact legislators when some critical legislation is pending. Too often, however, we forget to follow-up and thank the legislator for his support

and consideration. A short "thank you" note may do much to enhance the image of agricultural education.

Often teachers within a district find it appropriate to hold a "let's get acquainted" activity with their legislator. A meal function or a coffee and doughnut session may be held. The important thing to remember is to keep the gathering informal. Legislators are often pressed to attend formal functions so they welcome the opportunity to attend an informal activity with constituents.

During this meeting, the opportunity may arise to discuss legislation of critical importance to agricultural education; however, the best approach may be to use the occasion to get better acquainted. Legislators appreciate this unpressured approach. Later, in a more formal atmosphere, the door may be opened to discuss specific legislative issues.

Recognition

A second area is the public recognition of members of the legislature who support the program of agricultural education. Awards should be bestowed to these friends at some appropriate occasion. All the media should be used in an effort to maximize the publicity for this recognition.

A great deal of discretion must be observed in this type of activity. These awards must not be promiscuously distributed to questionable supporters. When this occurs, it lowers the value of the award. Only steadfast supporters should be recognized in this manner.

Contacts

The third area for consideration is the work during the legislative session. A paid employee who can be on the scene is a necessity to perform this function.

There is no substitute for a legisla-



Herbert Schumann

Herbert Schumann, the immediate Past President of the Vocational Agriculture Teachers Association of Texas, is presently working toward the doctorate in agricultural education at Texas A & M University.

tively oriented executive secretary who can make daily contacts with the legislators. Being on the scene may enable him to become aware of impending legislative developments that may adversely affect agricultural education. A few telephone calls or personal visits may suffice to enlighten key legislators of the effects of the proposed legislation.

In Texas, vocational agriculture teachers have placed legislative action as one of their highest priorities. A full-time executive secretary is located only two blocks from the state capitol. He makes daily contacts with legislators. He is personally acquainted with most of them. A legislative awards program is held each year at the vocational agriculture teachers' summer conference. Teachers in the legislative districts hold regular meetings with their legislators. The executive secretary keeps them informed of legislative developments so that they may effectively communicate with their representatives in government.

How politically effective is agricultural education in your state? During these critical times it is imperative that you evaluate your legislative efforts. The future of our profession depends on it!

Patterns for Preparing Teachers of Agriculture in Post-Secondary Schools

JOHN J. CRAGUN
Michigan State University

Much has been written in recent years concerning the rapid growth and development of post-high school educational institutions. At the present time over fifty new community colleges are established each year in the United States. Similarly, area vocational-technical schools have been and are being started in several states.

A continuing expansion of educational programs must be brought about because of the increase in population, the increase in the number of college-age people, and the changing employment pattern. These developments have created a pronounced demand for personnel qualified to teach many courses, especially vocational and technical courses, at the post-high school level.

The Study

It seemed apparent, even though one finds excellent pre-service and in-service teacher education programs for secondary vocational agriculture teachers, that direction was needed concerning the preparation of technical agriculture instructors for post-high school



John J. Cragun

John J. Cragun, is Director of the Battle Creek Area Student Teaching Center for Michigan State University. This article is based on Dr. Cragun's Ph.D. thesis, "Preferred Pattern of Preparation for Teachers of Technical Agriculture at the Post-High School Level," which was completed at Michigan State University in November 1969.

educational institutions. Reported in this article are the findings of a study designed to determine the most desired preparation for persons planning to teach technical agriculture in post-high schools. Deans and/or directors of post-high school institutions offering instruction in agriculture and teacher education in agriculture were asked what preparation or cluster of preparation they considered most desirable for technical agriculture instructors in post-high school institutions.

An opinionnaire was designed to obtain respondents' opinions concern-

ing 57 items of teacher preparation. Respondents scaled each item of teacher preparation by indicating whether the item was undesirable, somewhat desirable, desirable, strongly desirable, or very highly desirable. Opinionnaires were mailed to 76 deans and/or directors of post-high schools in thirteen North Central states and to 81 teacher educators in agricultural education in colleges and universities in the same states. Sixty deans and directors and 75 teacher educators returned usable responses.

(Continued on page 17)

PREPARATION CONSIDERED DESIRABLE FOR TEACHERS IN POST-SECONDARY SCHOOLS

RANK	ITEM	RANK	ITEM
1	Bachelor's degree in agricultural education, master's degree in area of specialization, and specialist's degree in agricultural education plus (a) work experience in area of specialization and (b) teaching experience in vocational agriculture.	5	Bachelor's degree in agriculture and master's degree in agricultural education with emphasis on teaching at the post-high school level plus (a) work experience in area of specialization.
2	Bachelor's degree in agricultural education and master's degree in area of specialization plus (a) work experience in area of specialization and (b) teaching experience in vocational agriculture.	6	Bachelor's degree in agricultural education and master's degree in area of specialization plus (a) work experience in area of specialization.
3	Bachelor's and master's degrees in agricultural education plus (a) work experience in area of specialization and (b) teaching experience in vocational agriculture.	7	Bachelor's degree in agricultural education and master's and doctoral degrees in area of specialization plus (a) work experience in area of specialization and (b) teaching experience in vocational agriculture.
4	Bachelor's degree in agricultural education, master's degree in area of specialization, and specialist's degree in agricultural education plus (a) work experience in area of specialization.	8	Bachelor's, master's and doctoral degrees in agricultural education plus (a) work experience in area of specialization and (b) teaching experience in vocational agriculture.
		9	Bachelor's, master's and specialist's degrees in agricultural education plus (a) work experience in area of specialization.

Horticulture Technology in Canada

B. J. GODWIN
Agricultural and Vocational College
Olds, Alberta, Canada

The Agricultural and Vocational College (at Olds, Alberta, Canada) has pioneered the development of Horticultural Technology training programs in Western Canada. The fifth class graduated in April 1969 and the seventh freshman class enrolled in September 1969.

In this program men and women prepare themselves as semi-professional workers in a challenging and expanding vocation. Through classroom study and on-the-job training, students acquire a broad general knowledge of the principles and practices of horticulture. Graduates have already assumed a wide variety of responsible positions in the commercial production of food and ornamental plants, in park systems and projects, as support technicians in horticultural and forestry research, and in commercial landscaping and government services.



B. J. Godwin (standing right), Senior Instructor in Horticultural Technology at the Agricultural and Vocational College, Olds, Alberta, Canada, teaches students pruning techniques.

The need for a horticultural technology program on the great plains of Canada was first discussed in 1959. Representatives of the University of Alberta, the Alberta Department of Agriculture, and the Parks and Recreation Department of the City of Edmonton presented preliminary plans to the Alberta Horticultural Advisory Committee in 1960. A brief was prepared and presented to the Provincial Government in 1961. The new program became a reality in 1963.

Staff and Facilities

The School of Horticulture is housed in a modern plant science building with excellent classroom and laboratory facilities, a 6,000 sheet herbarium, more than 5,000 square feet of greenhouse space and a horticultural library. The long established campus with its generous selection of ornamental plant materials, orchards, and gardens provides excellent opportunities for field studies. An ultra modern residence which opened in 1968 provides excellent accommodation for 500 students at cost of \$70.00 per month.

Three staff members devote the major part of their time to horticultural instruction. Since the course is one of several in an expanding college environment, specialists in other departments also provide instruction to horticultural students. More than ten instructors contribute to the instructional program.

Instruction

The extensive 2,000-hour horticultural lecture and laboratory program includes course work in plant physiology and plant breeding, soils and fertilizers, landscaping and surveying, floriculture and floral design, commercial vegetables and fruit production, horticultural practices and plant pests,

diseases, weeds, and insects. The course is further enriched by instruction covering mechanics, business administration, and a variety of seminars. In addition, students receive instruction in English, mathematics, public speaking, and recreation. Students spend over half of the program in the greenhouses, laboratories, and in the field.

The two-year program aims include both classroom and on-the-job training. From April to September during each of the two years of the program, students are placed with approved employers who agree and strive to give trainees as broad an experience in horticulture as their particular enterprise allows. On-the-job training is a vital component of the program.

The course receives guidance from an advisory committee of twelve men representing the major branches of the horticultural industry.

Employment

A survey in August 1969 of 72 graduates of the horticultural technology course indicates the employment picture of students completing the program.

Area of Employment	Percent
Park systems —	
Development and maintenance	28
Horticultural technicians —	
Government, university, and industry	21
Landscape industry —	
Planning and construction	13
Vegetable production	6
Nurseries	6
Floriculture	6
Sales	6
Other	8

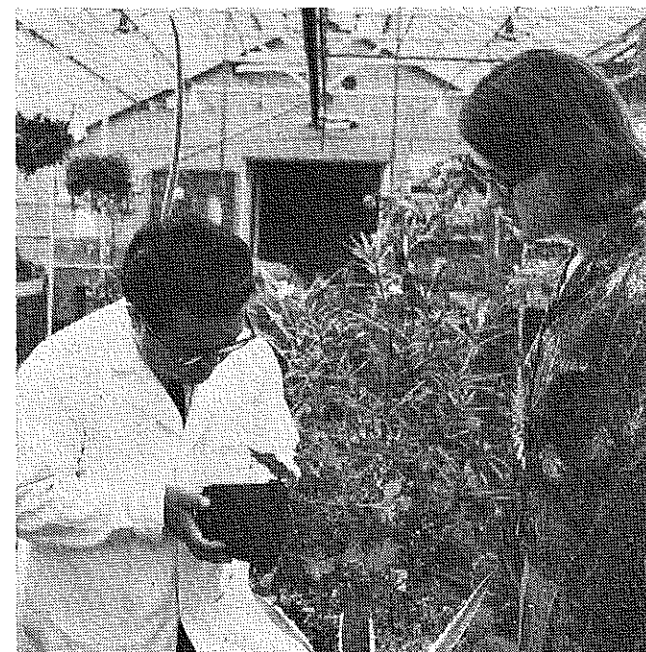
Leaders in the horticultural industry recognized the need for technology training to support and upgrade the industry. Course work has now been offered for five years and has in part fulfilled this need. However, the demand for students and graduates has to date exceeded the supply. Enroll-

ment has been increased from an original quota of 12 to a maximum of 20 per class while entrance requirements have been raised. Interest in the course continues strong and is evident far beyond the borders of the province. Students from five provinces are presently enrolled in the senior class.

The Future

Continued foresight is needed as the course moves into its second five-year period. A second survey of the industry is being conducted to gather pertinent information for course planning. It is quite possible that some types of third-year specialization can eventually be justified.

It is also probable that the present enrollment is inadequate to the needs of an expanding industry on the great plains. Expansion of the technology program in accordance with demonstrated need will assure a supply of well-trained personnel to the industry who can accept and cope with the expected and interesting challenges of the next decade.



Instructor M. J. Tsujita discusses pot mum culture with a Horticultural Technology student.

Patterns for Preparing Teachers of Agriculture in Post-Secondary Schools

(Continued from page 15)

Findings

The teacher educators and deans and directors considered nine of the forty-seven items of teacher preparation as most desirable for persons planning to teach technical agriculture at the post-high school level. The nine items are listed in the accompanying table.

The item receiving the highest rating included the following elements: bachelor's degree in agricultural education, master's degree in area of specialization, and specialist's degree in agricultural education plus work experience in area of specialization and teaching experience in vocational agriculture. The first four items listed stood out as being the most desired items of teacher preparation for persons planning to teach technical agriculture at the post-high school level.

No statistically significant difference existed between the teacher educators and the deans and directors concern-

ing their mean response to the nine most desired items of teacher preparation.

Conclusions and Implications

As programs in agricultural education are planned for the seventies, a composite of the desired preparations for persons planning to teach technical agriculture at the post-high school level might include the following elements.

Insofar as an educational background is concerned, it would appear that teacher educators would be pleased to recommend for post-high school instruction in technical agriculture persons with a bachelor's degree in agricultural education and a master's degree in an area of specialization. Some teacher educators would like these persons to have a master's degree in agricultural education rather than in a specialized area of agriculture. Some prefer that these teaching candidates

have a specialist's degree in agricultural education. Furthermore, it appears that administrators in post-high schools are willing to employ persons with these qualifications to teach technical agriculture in their institutions.

Along with their formal educational preparation, teacher educators desire persons preparing to teach technical agriculture in a post-high school to have work experience in their area of specialization. A majority also want future post-high school teachers to have previous experience in teaching vocational agriculture.

In addition to the educational background, administrators are inclined to value highly the element of work experience in an area of specialization for persons seeking teaching positions in technical agriculture in the post-high schools. A majority of the administrators desire that the prospective teacher have some experience in teaching vocational agriculture.

Some Considerations for Designing Post-High Technical Education in Agriculture

RICHARD G. FLOYD, JR. and DON GLAZIER
Essex Agricultural and Technical Institute
Hathorne, Massachusetts

Too often it appears educational programs are framed by curriculums designed to meet the needs of only those individuals who follow a sequence of formal education that holds to the tradition of high school and then college. If students fail to fit the sequence, they are academically a failure after high school. This policy cannot be considered either adequate or educationally sound. Post-high school technical education in agriculture can do much to alter the image.

Relevant Curriculums

Educational programs must serve the needs of the participants. This means relevant curriculums which lead to accomplishment of pre-determined objectives such as placement in a specific field, additional formal education, or upgrading within existing employment. Objectives such as these can be met in many instructional programs without mention of specific course length, prerequisite requirements, or other factors usually considered to be significant in the structuring of school calendars and other program-related considerations.

Unfortunately the trap is being set to make post-high school education a part of the traditional education sequence. The emphasis of two-year schools is too often one of offering the associate degree, because in our degree oriented

society this has more status than a certificate of attendance.

It is true that the offerings of two-year post-high school institutions provide many more high school graduates an additional opportunity to prepare for a position in life more rewarding than a high school diploma might normally allow. However, with the emphasis on the associate degree and the necessary bolstering of course requirements so that the degree can be offered, many students are again not qualified or drop out because they are unable to handle the added work. Many just do not find it sufficiently interesting to put forth the effort which is required to obtain an associate degree.

Serving Students

This does not have to occur. Post-high school technical education in agriculture lends itself freely to scheduling which can serve individual needs. Students can, with proper guidance, be the selectors of their fate. Their objectives and needs will differ whether they are seeking a specific level of occupational placement, a certificate or degree program, an upgrading of existing knowledge, specific technical information, or are merely continuing their education in search of a career.

The logical solution is program development based on the needs of the



Practical experience is stressed in the Floriculture-Floral Arrangement courses at Essex Agricultural and Technical Institute.

industries being served in relationship to the desires and abilities of the students who will seek education and training. If results of curriculum development indicate the need for an associate degree program then it should become an integral part of the program. If not, let the status of the program be its ability to prepare students for the area it is designed to serve.

New Image

Associate degree programs are being developed because it has not been exhibited that a purposeful and relevant curriculum is enough in itself. To change this image, guidance personnel, students, the public, and industries for which the programs prepare personnel must recognize the virtues of each curriculum. Education cannot validly be set up in a "peck order" with the value of each program measured by degree status or academic difficulty. Over the years vocational education, especially vocational agricultural education, has been termed a dumping grounds for
(Continued on next page)



Richard G. Floyd Jr.

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Don Glazier

General Education in Agriculture in Post-Secondary Schools

THOMAS C. LEAMER
Agricultural and Technical College
Cobleskill, New York



Thomas C. Leamer

Changes are occurring rapidly in all dimensions of society. Agriculture is no exception. These changes have created needs for more and different types of education in agriculture.

In addition to production agriculture, agricultural education includes instruction for non-production agricultural occupations in high schools, vocational schools, and two-year agricultural and technical colleges. One thing that we are not doing enough of at any level is that of emphasizing the value and importance of agricultural education in a general education setting. We must recognize that agricultural education has important practical arts or avocational functions to perform.

General Education

There is no doubt that an increasing number of students in all major

areas lack background or experience in agriculture. Many people may react indifferently to this situation and see no relevance in agricultural education for a non-agricultural major. The relevance is that students of today become the consumers of agricultural products of tomorrow. If these people are to exercise their citizenship responsibilities intelligently regarding agricultural policy, they need some background and education in agriculture. This type of instruction in agriculture can be given in agricultural courses designed specifically for general education.

One of the major problems facing the American public is that of managing leisure time. This is just one example of the kind of general education opportunities which will become increasingly necessary with the complex, technical nature of society.

Courses

The major instructional areas in vocational and technical education in agriculture are agricultural produc-

tion, agricultural supplies, agricultural mechanics, agricultural products, ornamental horticulture, forestry, and agricultural resources. These areas are organized on the basis of occupations requiring competence in specialized fields of agricultural science. Courses could be developed in each of these areas that would be suitable as quality general education electives. We need to emphasize quality, whether talking about general education, technical, vocational, or occupational education.

As a faculty member of a two-year agricultural and technical college, I believe that these colleges, in addition to preparing for employment, must give students two years of general education helping them become better citizens. General education courses in agriculture help achieve this objective.

Continuing Education

One segment that has not yet been mentioned in regard to agriculture as a general education offering is that of continuing education and adult programs. There are many agricultural courses that could be offered to help people prepare for retirement, or just to give people an additional opportunity to know and understand agriculture and the world in which they live.

In many cases the more education people experience, the more they want. As various types of education in agriculture are experienced, the demand will undoubtedly increase. It is becoming increasingly necessary to provide general education opportunities to help people cope with the complex technical nature of our society.

Designing Post-High Technical Education in Agriculture

(Continued from page 18)

academically slow and problem students. This can be the image projected for the future in post-high school technical agricultural education as well.

An Example

At Essex Agricultural and Technical Institute both the Associate Degree and the Certificate of Attendance programs are available to the students. High school graduates who enter the post-high school program are admitted on a basis of interest as well as academic standing. Enrollment in the Associate Degree program, co-sponsored by the

Technical Institute and the North Shore Community College, is based on students' aptitudes and objectives. Degree candidates receive English and mathematics at the Community College and all other courses at the Technical Institute.

It must be recognized that not all programs can be used as an academic building block for the next curriculum which the student may consider. Quality programs of this type can be easily weakened by a degree oriented structuring, when student and related industry needs are the big factors which

should be considered.

While keeping students' needs in mind, Essex Agricultural and Technical Institute solicits those students who have a definite interest in agriculture at all levels of academic standing.

Individual students have different needs and interests which must not only be recognized by educators but which must be satisfied at all levels of education. All students are not mentally, emotionally, and physically prepared to meet the challenge of formal education at the same time and in the same manner.

Inservice Education for Teachers of Agricultural Mechanics

DAVID L. WILLIAMS, University of Illinois
and
G. DONAVON COIL, Illinois Board of Vocational Education

Cooperative planning by state educational consultants, teacher educators, industrial personnel, and junior college instructors has resulted in an outstanding in-service program for Illinois teachers of agricultural mechanics. Two area vocational center teachers and 15 junior college agricultural occupations instructors completed a one-week intensified workshop conducted by the International Harvester Company at their Hickory Hill Service Training Center, Sheridan, Illinois.

Agricultural occupations consultants from the Board of Vocational Education and Rehabilitation, teacher educators from the Agricultural Education Division, University of Illinois, International Harvester personnel, and junior college instructors designed the workshop to acquaint teachers with the skills needed to service and repair today's modern agricultural equipment. Instruction focused on servicing hydrostatic drive transmissions and the Robert Bosch diesel pump.

Curriculum

Teachers participating in the service training program benefited from a combination of mechanical theory, practical experience, and teaching procedures. The curriculum was planned to familiarize the participants with the service and repair of new parts currently used on agricultural equipment.

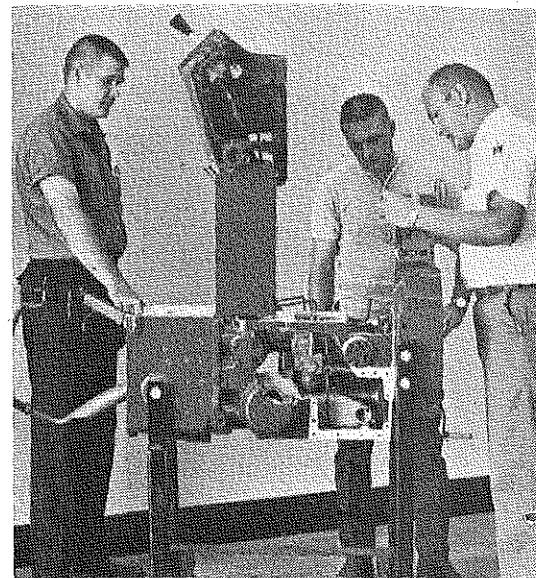
The teachers received instruction in the following areas:

- Operating hydrostatic drive equipment
- Understanding basic hydraulic systems
- Trouble-shooting hydrostatic drive transmissions
- Servicing hydrostatic drives
- Servicing Robert Bosch fuel pumps
- Trouble-shooting fuel injection systems
- Calibrating fuel pumps
- Identifying fuels, lubricants and air cleaners.

Procedure

Participants were taught by experienced instructors using the best teaching aids available. Hickory Hill Service Training Center is staffed by experienced, knowledgeable instructors who have had well-rounded service experience and specialized training in their teaching area. To insure that participants receive the personal attention needed to learn the service skills, laboratory classes never consisted of more than five or six students per instructor.

Instructors for the workshop expected participants to master some theory of hydraulics and fuel injection systems, but learning-by-doing was utilized primarily. Theoretical instruction was enhanced by the use of many teaching aids including films, "road map" charts,



Junior college agricultural mechanics instructors David Scott and Carroll Turner receive specialized instruction on the use of hydrostatic equipment.

cut-away parts, and actual parts and equipment. Learning-by-doing activities were effectively implemented by dividing the classes into two- or three-man teams. This procedure allowed each student to gain practical experience and to develop confidence in his ability to perform the service.

Skill instruction at the training center was prefaced by a review of teaching techniques in agricultural mechanics. Emphasis was placed on the importance of carefully developed teaching plans. Teaching techniques which can be used effectively in teaching agricultural mechanics were demonstrated and discussed prior to the technical training phase of the program. Participants had an opportunity to observe their instructors use effectively various teaching methods throughout the training program.

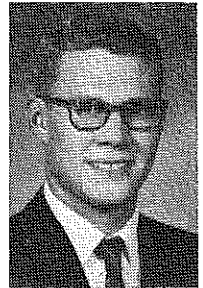
(Continued on next page)

Prospects for Veterinary Technician Programs

MAX L. AMBERSON, Teacher Education
and
CHARLES J. BATEMAN, Graduate Student
Montana State University



Max L. Amberson



Charles J. Bateman

As in other highly technical fields the veterinarian has begun to employ aides to assist in performing certain carefully defined and supervised duties and functions. To ascertain the degree to which these practices were in operation and the outlook for veterinary technicians in Montana, study was conducted to gather and analyze employment data. Specifically, the study sought to identify the need for a veterinary technician training program in Montana. Although Montana's employment opportunities were of primary concern, implications for neighboring states were considered.

Objectives

The specific objectives of this study were to survey all the states in the U.S. regarding the status of veterinary technician programs, to ascertain employers' attitudes about the establishment of a veterinary technician program, to determine the specific number of veterinary technicians needed, to determine the competencies needed by veterinary technicians for entry employment, and to determine the type and length of educational programs necessary. The study was also designed to acquaint veterinarians in Montana with the status of veterinary technician programs nationally and to solicit their support and cooperation in the establishment of such a program in Montana should there be a need.

Findings

The national survey revealed that 14 of the 48 states surveyed currently have veterinary technician programs or their equivalent. Should a veterinary technician program be established in Montana, 16 other states in the Pacific Northwest indicated that they

would benefit directly. In 45 states there was an indication that the greatest employment opportunities were in the small animal practice area.

In Montana, 59 practicing and licensed veterinarians provided returns to the survey. Approximately 58 per cent of the returns favored the establishment of a veterinary technician program.

The areas in which students would need competencies were office procedure, bookkeeping, laboratory techniques, and animal restraint methods. Desirable methods for preparing veterinary technicians would employ a combination of both theory and practice. Practicing veterinarians, diagnostic laboratory technicians, and professional personnel from institutions of higher education were considered to be persons most qualified as instructors for a veterinary technician program.

The general practitioner phase of veterinary medicine would offer the most employment opportunities for technicians. Full- and part-time employment would be available for 35 qualified veterinary technicians in Montana each year beginning in 1971. Salaries for veterinary technicians would range from a high of \$550.00 per month to a low of \$250.00 per month with the mode salary being \$400.00 per month.

The D.V.M.'s indicated some type of license should be required. License requirements for a veterinary technician should be based on successful completion of minimum schooling, internship, and a test.

A majority of the D.V.M.'s who favored instituting a veterinary technician program indicated that Montana's employment opportunities were good to very good.

This study provides the data essential for one of Montana's post-secondary area schools or community colleges to make positive steps toward initiating an educational program. Though there is an identified need, the full support from veterinarians in Montana has not been obtained to date.

Inservice Education for Teachers of Agricultural Mechanics

(Continued from page 20)

Summary

In-service teacher education programs at public institutions are not geared to provide all the up-to-date, technical knowledge and skill needed by teachers of agricultural mechanics. Agricultural industry has excellent facilities and competent instructors who train employees within their own company.

Through joint planning by education and industry, it is possible to schedule short, specialized training programs which will meet the needs of in-service vocational teachers. The International Harvester Company has expressed their willingness to cooperate in providing similar training programs for teachers of agricultural mechanics in the future. Results of the specialized instruction received by teachers will be reflected in improved instructional programs.



David L. Williams

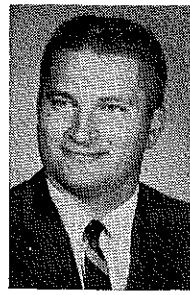
David L. Williams is Assistant Professor of Agricultural Education, University of Illinois, Urbana-Champaign. G. Donavon Coil is Head Consultant of Agricultural Occupations, Illinois Board of Vocational Education and Rehabilitation, Springfield.



G. Donavon Coil

Post-Secondary Education in Ornamental Horticulture

LARRY L. STATLER
Kirkwood Community College
Cedar Rapids, Iowa



Larry L. Statler

There are few fields with more employment opportunities than ornamental horticulture. This philosophy was the consensus of the Horticulture Advisory Committee when the Horticulture program was established at Kirkwood Community College three years ago. Since the program was established, much time and effort have gone into the planning, conducting, evaluating, and revising a program that is most needed.

Program

Students enrolled in ornamental horticulture are not asked to select a specific area of horticultural interest during the first quarter. The first year of the program deals with basic core courses in the horticultural field.

As students become more familiar with ornamental horticulture and begin to finalize their occupational choices, we begin to stress that they should specialize into one of three areas: Lawn and Turf; Landscape, Nursery, Garden Center; and Parks, Recreation, and Natural Resources. The second year of study includes specialized study in one of the three areas.

Occupational experience is provided through the following:

—Employment in businesses engaged in the planting, landscaping, and designing of homes and properties.

—Complete management of the 320-acre campus in regard to landscaping.

—Thirty per cent of regular school time is spent in employment experience. (On-the-job-training)

—Establishment, management, and maintenance of a 20-acre sod field laboratory.

—Establishment of arboretums on the central campus.

—Experience in the greenhouse laboratory.

—A continuing home practice program.

The program is structured in such a manner that a student can pursue his education as far as his abilities, finances, and interests allow. Varied employment opportunities in the ornamental horticulture industry require students of all levels of ability.

Teaching

The problem method of teaching is used with emphasis on the solution of realistic problems. Both boys and girls are enrolled in the courses.

By merging the ornamental Horticulture program with other programs in the College's Agricultural Education Department, advancement has been seen in that students can work with the agricultural production, agricultural mechanics, and agricultural business students directly in the farm situation. This has proven to be a realistic situation for ornamental horticulture students as they work directly



Ornamental Horticulture students at Kirkwood Community College get practical experience in landscaping the campus.

with their fellow students as prospective customers.

There have been and will continue to be developmental problems as we endeavor to make the proper approach to prospective students and work with the industry. This is a problem, however, that is no different from the development of other programs in post-high school institutions.

Subscription Notice

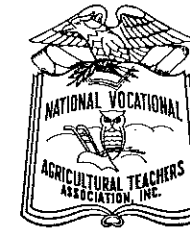
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News and Views of NVATA

JAMES WALL
Executive Secretary



The NVATA-USOE Committee met at NVATA Headquarters in Lincoln, Nebraska, on April 10, 1970, for the purpose of evaluating progress related to the problems of Vocational Agriculture and the FFA. Those present were Jim Durkee, Wyoming, Chairman; R. J. Agan, Kansas; James A. Barge, Florida; C. W. Dalbey, Iowa; L. C. Dalton, New Mexico; J. I. Dawson, Alabama; T. L. Faulkner, Alabama; Millard Gundlach, Wisconsin; A. H. Krebs, Virginia; Milo Peterson, Minnesota; William Smith, New Jersey; and James Wall, Nebraska.

Following are some observations resulting from the meeting.

- The continued loss of identity of services, generalization of vocational education, and the shortage of staff members in the USOE can be traced to one or two people. So far, efforts to convince them that to be strong and

effective vocational agriculture must be conducted on a specialized basis have not met with success. Everyone knows that vocational education is specialized education, and to treat it otherwise will kill it. Whatever pattern is followed in the USOE eventually affects the patterns followed in many of the states. It is for this reason that the USOE must be redirected in order for the states that have already patterned after the USOE may also be eventually redirected.

- Special legislation was considered but definite plans were not developed.

- The importance of a united effort on the part of all vocational services was discussed. Apparently most of the other vocational services are not aware enough to be concerned over the direction in which vocational education is headed. Vocational agriculture cannot afford to wait for others, or it may be too late.

with most of the basic problems inherent to utility building design.

The book is not intended to tell how to build specific structures, however it does contain a listing of plans for utility buildings. The information contained in the book is designed to help the student make wise decisions when selecting a plan that provides the type of construction needed for utility buildings. For example, it contains such information as how to avoid wind damage, how to protect against lightning, how long various building materials will last when exposed to weather, and how to provide post-free space. These topics and many others are dealt with on the basis of the latest research information and experience.

Every vocational agriculture department, technical institute, and college

- There is a need for vigorous support from AVA. The AVA House of Delegates at the Boston Convention passed a resolution on "Staffing for Vocational Education Leadership in Occupational Areas." The NVATA-USOE Committee will be glad to learn of any efforts by AVA to carry out the intent of the resolution.

- Congressmen and others in positions of influence need to be acquainted with the situation that exists in the USOE.

- States that do not already have a State Vocational Agriculture Industry/FFA Support Council should take immediate steps to organize one. A committee of this kind with the proper people as members could be invaluable in recommending direction of vocational agriculture and FFA and would always be ready to help when needed. Membership should be those who would be in a position to give proper advice and support when needed.

- It was agreed that some improvement on the attitude of the USOE toward youth groups was noted from Dr. James E. Allen's letter of January 29, 1970.

- It is understood that the USOE has promised another full-time position for Agricultural Education.

- Many top people in agricultural business and agricultural organizations continue to work with the Committee.

course in farm structures will find this book and the material it contains to be of tremendous value. It should be included as a part of the reference material available to students who are dealing in design problems.

Leo P. Herndon
University of Nevada

BOOK REVIEW

FARM UTILITY BUILDINGS — DESIGNS, MATERIALS, PLANS revised by G. Wallace Giles, George Smith, and Florence Gorham. Athens, Georgia: American Association for Agricultural Engineering and Vocational Agriculture, 1969, 64 pp. \$2.50.

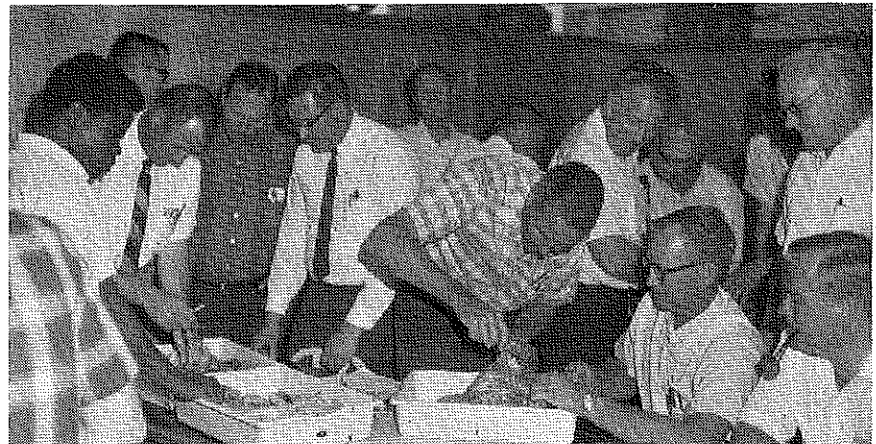
A simplified, yet comprehensive and up-to-date book on the various problems encountered when designing utility buildings is needed in every vocational department with courses dealing with building structures. This book will prove to be of great value as it deals

Correction

The correct information concerning *Youth Opportunity in America — Agribusiness* which was reviewed on page 238 of the March 1970 issue is as follows: Cost of the two sets of slides and tapes and the teaching guide is \$59.50. Order from Visual Education, Inc., Suite 819, 1425 H Street, N. W., Washington, D. C.



Eldon Witt (left) and E. L. Bosomworth (right), Executive Secretary and President, respectively, of the Illinois Association of Vocational Agriculture Teachers, present dressed poultry to the Superintendent of Cunningham Children's Home on behalf of IAVAT. (Photo by Howard Knight)



Colorado vocational agriculture teachers participate in a summer workshop on Animal Reproduction. Each teacher had an opportunity to identify the parts of the male and female reproductive tracts of beef cattle, sheep, and swine. (Photo by Stanley Lancaster)



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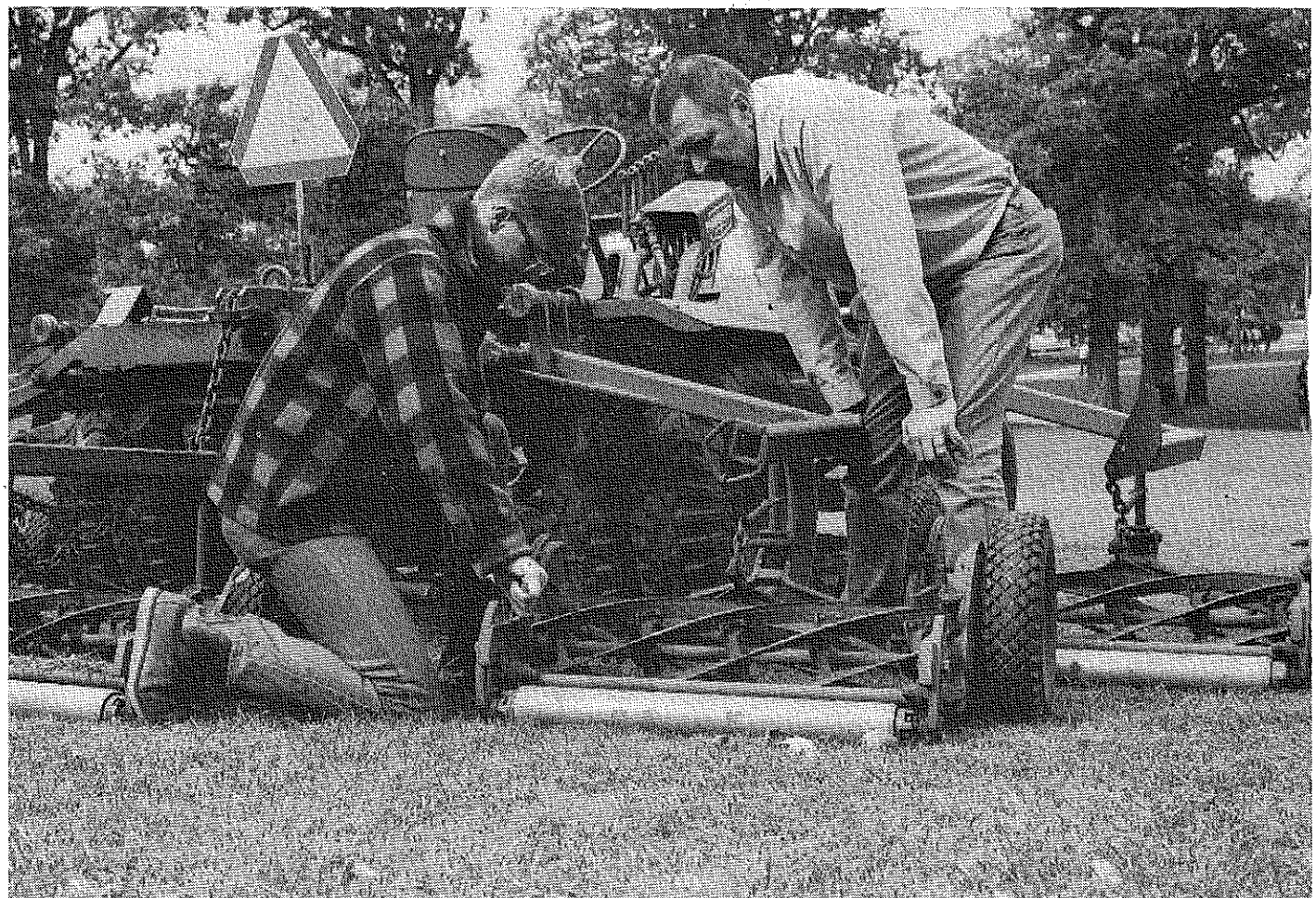
Agricultural Education

August, 1970

Number 2

Stories in Pictures

ROBERT W. WALKER
University of Illinois



Students learn to adjust, maintain, and operate equipment used in the horticulture industry in Michigan. (Photo by Rodney Tulloch)



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