Stories in Pictures

ROBERT W. WALKER
University of Illinois

National FFA President, Henry Bidwell, receives a check for $2,000 from the FFA Foundation from Ray H. Maroney (right) of the General Motors Corporation. Dr. N. M. McDowell, Executive Director of the FFA Foundation, also presented the check. The presentation was made during the Central States Seminar in Agricultural Education held in Chicago, February 1970. (Photo by Curtis R. Wreven, University of Missouri)

Lester Williams, student teacher from Prairie View A&M College, Texas, provides an overview of the operation of the FFA Foundation program at the University of Illinois. (Photo by Robert W. Walker, University of Illinois)

A display of student tools helps Lexan Wiltse, Vocational Agriculture Teacher at Keota, Colorado, teach puppets, sheep, and use of tools. (Photo by Pete Foster, Colorado)

Featuring —
AGRICULTURAL EDUCATION IN POST-SECONDARY SCHOOLS
Editorials

The “Vo-Ag” Model and Post-Secondary Programs

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 denoted an educational program characterized by some rather distinct features.

First and foremost, it is the designation of an educational program in community colleges and in the secondary schools. Other distinctive earmarks include active and direct supervision of local programs by personal in state departments of education, a corps of degreed-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 intracollegiate 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 educational 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 Editorials

Articulation: A Responsibility and a Challenge

Community and junior colleges which offer vocational and technical education 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.

Paul L. Hemp

Paul L. Hemp is Professor and Chairman, Division of Agricultural Education, University of Illinois, Urbana-Champaign.

(Continued on next page)
completely to post-secondary agricultural education is the supervision role of personnel in state departments of education. It is not uncommon for post-secondary institutions, particularly junior colleges and junior universities, to be aligned with or a part of a state's higher education system rather than being an upward extension of the secondary schools. In these cases, a separate 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 facets of the vocational agriculture model which evolved from a secondary school setting. Post-secondary educators, as a rule, are more autonomous in organization 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 and its instructional and service 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 in the point-of-view that more readily acknowledges the necessity of an instructor's knowledge of subject matter than it recognizes the prerequisites of pedagogical competence. A related problem is the extent to which instructors who do not hold baccalaureates 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 profession—teachers' organizations 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 unnecessarily on post-secondary agricultural education is a national students' organization. A recent news release announcing the reaffirmation of responsibilities of the national FFA staff indicates the possible establishment of the 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."
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 cam-
pus 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 objectives of the work-experience program is to help develop close coordination between the educational experience at school and the actual on-the-job situations. 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 employ- ment opportunities available to graduates completing the program.

Agricultural Business Technology: bookkeeper, salesmen, assistant or manager in feed, seed, chemical and fertilizer store, grain elevator, coop, farm equipment dealership, or lumber yard; part-time 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 engineer and 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 con-
tractors, consulting engineers, or irrigation firms; farm operator vested in latest soil and water conservation practices.

Agricultural Machinery Mechanics Technology: mechanic; mechanic's helper for farm equipment dealer; salesman or partsman for farm equipment dealer; maintenance of equipment on 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; herdman for livestock pro-
ducer; manager or assistant manager for commercial feed lot; farm or ranch foreman or assistant foreman; job with ag-related industry.

Agricultural Technology: veterinary assistant; city, state, and federal ani-
mal health agencies; research and de-
velopment for government and private industry.

Each program of instruction trains for a specific occupational. This in-
sure flexibility of employment opportu-
nities.

ADVANTAGES

All programs were established through the joint efforts of specific advisory committees and school per-
sonnel. The overall operation of the school is under the suggestive gui-
dance of a General Advisory Committee. The individual program advisory com-
titutes and the school's General Ad-
visory Committee are involved 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 specialty areas. Equipment and facili-
ties are also utilized by more than one instructional program.

Being a part of the University of Nebraska is also an advantage. We have full use of the facilities and personnel from the College of Agri-
culture and Home Economics and the University of Nebraska Experimen-
tation Stations as resources persons in specific instructional areas. Our stu-
dents also gain the prestige of being a student of the University of Nebraska.

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

In Kansas

A State Organization for Post-Secondary Students

R. J. AGAM, Teacher Education Kansas State University

A national organi-
sation for stu-
dents in post-se-
condary agricultural education? Kansas teachers and stu-
dents of this organi-
sation recently voted "yes"
when they orga-
nized the Kansas Agriscience Student Association to serve students in post-
secondary programs in the State. Their hope is that other states will form or-
ganizations for post-secondary agricul-
tural education students. Eventually, a national association may be formed.

New Organization

On March 14, 1970, seventeen post-
secondary students, thirteen instruc-
tors, and seven state, regional and

national consultants in agricultural edu-
cation 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 or-
ganization for students enrolled in post-
secondary agricultural programs in
junior and community colleges and in
area vocational-technical schools. Tem-
porary officers were elected and a
board was designated to develop the
details of a constitution. Harold Shooft and Earl Winsinger of the Kansas Supervisory Staff in Agricultural Edu-
cation were named as coordinators (ad-
visers) of the state organization. The
official board met on April 4, 1970, to
adopt a name and develop a constitu-
tion for the organization.

Operation

The Kansas Agriscience Student Association will be an organization more complex than the first FFA Association. There will need to be formed special affiliations with chapters by e loci. 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 Agriscience Student Association. Herbert Muncaster and Byron Rake of the U.S. Office of Education attended the organizational meeting. (Photo by Earl Winsinger)
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 practice expanding in both number and kind of animals. The 1960-69 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 1960-75 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 of the pet industry has led to public health and disease-control programs also adding 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 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 September 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. In addition to members of the Wisconsin Veterinary Medical Association, were representatives of the Wisconsin Board of Veterinary, 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 Veterinary, 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 potential needs 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 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 training equipment cost, a questionnaire was sent to 429 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. The average value of the program are to develop skills in animal care, Reception and record keeping, nutrition of animals for examination and treatment, 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, zoology, psychology of human relations, veterinary techniques, animal behavior and physiology, veterinary anatomy, and veterinary medicine.

**Agricultural Banking—A New Post-Secondary Program**

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

An Agricultural Banking program in an area vocational school? The banking industry was suggested as we searched for an industry where the untrained 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 three years 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 operation, installment credit, agricultural credit, farm 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, mathematics, communications, and human relations. Before beginning the supervised experience phase, students are given an intensive two weeks of tutorial 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.

**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 this point the proposal 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 veterinarian degree. The objectives of the program are to develop skills in animal care, Reception and record keeping, nutrition of animals for examination and treatment, 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.

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**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.
Post-Secondary Technical Education in Forestry

Mervin 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 growing somewhat away from practical field methods led to the development of post-technical 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 1960, 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 listed five forest technician programs with eight or eleven additional programs being considered.

The Thompson School of Applied Science, the two-year division of the College of Science 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, scientists, 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, and interest in forestry. Students are encouraged to ask about college life, transfer policies for 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 he proceeds laterally into other 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 utilized effectively. We have attempted to coordinate our program into groups of concurrent courses arranged to build smoothly from one group of courses to the next. As can be noted from the list of courses, we offer more technical related courses in the third and fourth semesters. The reasons are obvious. The student has developed his 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 are able to handle 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 wood 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 basic log handling, scaling, and cutting techniques.

A complete 32" band saw mill was donated by a commercial company for use in the training program. We also lease a hydraulic log loader for logging operations. We are planning the construction of lumber for so that this machinery can also be used in the sawmill training program. Another company donated a portable, waist-high 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 fee discussions on the economics involved. Senior students will have a piece 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 climatic 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 in the field. Log transportation gives him knowledge of the conditions under which a log becomes marginal, submarginal, or unprofitable after bucking.

In the fourth semester the student turns his attention to timber cruising, scaling, and sawmill techniques and utilization. The student has the opportunity to cruise timber to determine the standing volume and day one and the next to see the logs opened at the sawmill to determine quality deductions. By this process the student is more able to determine accurately the actual mill volume which can be saved 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 basic techniques so that by the end of his fourth semester his cruise reports are more accurate and 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 basic skills are desirable for those entering government employment as well.

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 further, we are going to be increasingly looking for men with wider skills, better educational backgrounds, and with more ability to the acceptance of field responsibilities.

We believe that men with a broad background knowledge such as these are going to be needed. A technical program could be directed into a specific work area which gives more knowledge concerning the basic background and planning necessary 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 accept the job, not as a substitute program, but as a career employment program.

Employment

July 1970

Courses for Forest Technicians

SEMMER SEMESTER II
Elementary Forest Surveying
Computations Skills
Surveying Techniques
Applied Silviculture
Dendrology-Ecology
Technical Drawing
Review
Forest Orientation Seminar
Summarize Program: Four weeks of on-the-job work experience

SEMMER SEMESTER IV
Personal Management
Forest Survey Methods and Law
Timber Harvesting
Advanced Forest Surveying
Forest Recreation
Wood Properties and Identification
Elective
Regional Forest Management Field Trip Industries.

Students in the Forest Technician Program take a two weeks of field experience with forest industries.

Mervin E. Jenkins
Associate Professor and Superintendent, College of Science, 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

In the area of educational media, processes, mechanics, and personnel we observe...

- A multiplication of new media and technologies for recording, storing, retrieving, delivering, and presenting material to students.
- New insights into areas of socio-psychological significance in the nature of human development, the learning process, and individual differences.
- A growing importance of bringing teachers under closer scrutiny.
- The emergence of highly differentiated staffing systems including auxiliary support staff; interns; teacher aides; associate teachers; staff teachers; area 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.

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.
- A growing interest in the high school curriculums of pre-technical education.

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

- A decline in self-employment with the growing realization that workers must become sensitive to the demands made by agricultural business on its employees.
- Most workers in agriculture employed not in the output of agricultural goods but in providing services and supplying goods to those engaged in agricultural production, processing, and marketing.
- An 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 widespread movement in integration, both vertical and horizontal.
- The impact of integration stimulating specialization of services in production, processing, and marketing.
- A movement to students who do not have high school diplomas to post-secondary programs.

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 as 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 are highly competent and challenging by and challenged in their work.

Pro-Service Education

The professional education element of the pre-service program will focus upon the adult as a learner. Unique features include perception, differentiated curricular patterns, and an advanced level of maturity demand a unique approach to teaching.

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- 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.

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

- A decline in self-employment with the growing realization that workers must become sensitive to the demands made by agricultural business on its employees.
- Most workers in agriculture employed not in the output of agricultural goods but in providing services and supplying goods to those engaged in agricultural production, processing, and marketing.
- An 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 widespread movement in integration, both vertical and horizontal.
- The impact of integration stimulating specialization of services in production, processing, and marketing.
- A movement to students who do not have high school diplomas to post-secondary programs.

In the area of educational media, processes, mechanics, and personnel we observe...

- A multiplication of new media and technologies for recording, storing, retrieving, delivering, and presenting material to students.
- New insights into areas of socio-psychological significance in the nature of human development, the learning process, and individual differences.
- A growing importance of bringing teachers under closer scrutiny.
- The emergence of highly differentiated staffing systems including auxiliary support staff; interns; teacher aides; associate teachers; staff teachers; area 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.

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POLITICAL ACTIVITIES OF STATE TEACHERS’ ASSOCIATIONS

HERBERT SCHUMANN

Toms A and M University

Have you evaluated the legislative efforts of your state association recently? Our political awareness is of paramount importance today. Too many are turning down bond issues at an ever-increasing rate. Concerned citizens are becoming ecumenic in government. Legislators are hearing 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. Developing the U.S. Office of Education illustrates 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 disinterested as it may seem to them, 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. Pertinent legislators are approached to the communities they represent. If the community has a favorable impression, 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 a very important critical legislation is pending. Too often, however, we forget to follow-up and thank the legislators 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 legislators. A meal function or a coffee and doughnut function 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 unscheduled 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 legislator who can be on the scene is a necessity to perform this function. There is no substitute for a legisla...

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

Patterns for Preparing Teachers

of Agriculture in Post-Secondary Schools

JOHN J. CRAGAN

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 appearing 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 technical agriculture in post-high schools. Deans and/or directors of post-high school institutions offering instruction in agricultural education in other states in the 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

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<tr>
<th>RANK</th>
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<tr>
<td>1</td>
<td>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</td>
<td>5</td>
<td>Bachelor's degree in agriculture and master's degree in agriculture education with emphasis on teaching at the post-high school level plus (a) work experience in area of specialization</td>
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<td>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</td>
<td>6</td>
<td>Bachelor's degree in agricultural education and master's degree in area of specialization plus (a) work experience in area of specialization</td>
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<td>3</td>
<td>Bachelor's and master's degrees in agricultural education plus (a) work experience in area of specialization and (b) teaching experience in vocational agriculture</td>
<td>7</td>
<td>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</td>
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<td>4</td>
<td>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</td>
<td>8</td>
<td>Bachelor's, master's, and doctoral degrees in agricultural education plus (a) work experience in area of specialization</td>
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<td>9</td>
<td>Bachelor's, master's and specialist's degrees in agricultural education plus (a) work experience in area of specialization</td>
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JULY, 1970
Horticulture Technology in Canada

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

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 was approved 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 square feet greenhouse, more than 5,000 square feet of greenhouses 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 1963 provides excellent accommodation for 300 students at a cost of $10.00 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 provide instruction to horticultural students. More than ten instructors contribute to the instructional program.

Instruction

The extensive 2,000-hour horticultural technology program includes course work in plant physiology and plant breeding, soils and fertilizers, landscape and surveying, floriculture and horticultural design, commercial vegetables and fruit production, horticultural practices and plant pests, diseases, weeds, and insects. The course is further enriched by instruction in computer 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 at 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 to train and give full time 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 1969 of 72 graduates of the horticultural technology course indicates the employment picture of students completing the program.

<table>
<thead>
<tr>
<th>Area of Employment</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Park systems</td>
<td>20</td>
</tr>
<tr>
<td>Development and maintenance</td>
<td>15</td>
</tr>
<tr>
<td>Horticultural technicians</td>
<td>10</td>
</tr>
<tr>
<td>Government, university, and industry</td>
<td>15</td>
</tr>
<tr>
<td>Landscape industry</td>
<td>10</td>
</tr>
<tr>
<td>Planning and construction</td>
<td>5</td>
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<tr>
<td>Vegetable production</td>
<td>20</td>
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<tr>
<td>Nurseries</td>
<td>5</td>
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<tr>
<td>Floriculture</td>
<td>10</td>
</tr>
<tr>
<td>Sales</td>
<td>5</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
</tr>
</tbody>
</table>

The job market was not as strong as expected, but the graduates were able to find employment in a variety of fields.

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, major or minor in area of specialization, and specialization 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 concerning 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 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 the 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.

Patterns for Preparing Teachers of Agriculture in Post-Secondary Schools

(Continued from page 15)
Some Considerations for Designing Post-High Technical Education in Agriculture

RICHARD G. FLOYD, JR. and DON GLAZER
Essex Agricultural and Technical Institute, Hatherell, 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 that participants must be given an opportunity to accomplish 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 leads 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 educational 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 industry being served in relationship to the desires and abilities of the students who seek education and training. If results of curriculums 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 "pick 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 ground for academically slow and problem students. This can be the image projected for the future of 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 be sacrificed in preparing the educators but which must be satisfied at all levels of education. All students are not vocally motivated; educationally 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 and G. Donavon Coll

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 inservice workshop conducted by the International Harvester Company at their Hickory Hill Service Training Center in 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 hydraulic drive transmissions and the Robert Bosch diesel pump.

Curriculum

Teachers participating in the service training program benefited from a combination of theoretical mechanics, 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 hydraulic drive equipment
- Understanding basic hydraulic systems
- Trouble-shooting hydraulic drive transmissions
- Servicing hydraulic drives
- Servicing Robert Bosch fuel pumps
- Trouble-shooting fuel injection systems
- Calibrating fuel pumps
- Identifying fuels, lubricants and air cleaners.

Procedure

Instructors taught the participants 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 ensure 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, 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 preceded 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 dramatized and discussed prior to the technical training phase of the program. Participants had an opportunity to observe their instructors use effective, various teaching methods throughout the training program.

(Continued on next page)

Propects for Veterinary Technician Programs

Max L. Anderson, Teacher Education

Charles J. Bateman, Graduate Student

Montana State University

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 existence and the outlook for veterinary technician 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. A state veterinary technician program should 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 procedures, 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 the most qualified as instructors for a veterinary technician program.

As for the general practitioner phase of veterinary medicine, other federal employment opportunities for technicians. Full- and part-time employment would be available for 55 qualified veterinary technicians in Montana each year. In 1971, salaries for veterinary technicians would range from a high of $500.00 per month to a low of $200.00 per month with the monthly salary being $400.00 per month. The D.V.M.'s indicated some type of practice should be employed. "I see the trend toward a combination of teaching, clinical, and research," while, "I would be interested in providing veterinary services but in a small community setting." A majority of the D.V.M.'s who would favor instituting a veterinary technician program indicated that Montana's employment opportunities were good to very good.

Inservce Education for Teachers of Agricultural Mechanics

(Continued from page 20)

Summary

In-service teacher education programs at public institutions are not covered to provide all the up-to-date, technical knowledge and the skills 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 develop short, specialized training programs which will meet the needs of in-service vocational teachers. The International Harvester Company has expressed its willingness to cooperate in providing special training programs for teachers of agricultural mechanics in the future. Results of the special training programs will reflect the effectiveness of the instruction received by teachers will be reflected in improved instructional programs.
Post-Secondary Education in Ornamental Horticulture

There are few fields with more employment opportunities than ornamental horticulture. This philosophy was the cornerstone 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.

Omninational experience is provided through the following:

- Employment in businesses engaged in the planting, landscaping, and designing of homes and properties.
- Complete management of the 20-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 field laboratory.

Establishment of arboreta 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. Various employment opportunities in the ornamental horticulture industry require students of all levels of ability.

Teaching

The problem method of teaching is employed with emphasis on the solution of real-life 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 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 with their fellow students as prospective customers.

These 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.

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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 programs related to the problems of Vocational Agriculture and the FFA. Those present were Jim Dushay, Wyoming, Chairman; R. J. Agin, Kansas; James A. Bargy, Florida; G. D. Babcock, Iowa; L. C. Huth, New Mexico; J. L. Donson, Alabama; T. L. Faulkner, Alabama; Millard Gundlach, Wisconsin; A. H. Krebs, Virginia; Mills 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 education 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 by the USOE eventually affects the patterns followed in many of the states. It is for this reason that the USOE must be realistic 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 unified 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.

BOOK REVIEW

FARM UTILITY BUILDINGS — DESIGNS, MATERIALS, PLANS, revised by Wallace Gilles, George Smith, and Florence Goetham. American Agricultura Association for Agricultural Engineering and Vocational Agriculture, 1965, 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 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 maximum of construction needed for utility buildings. For example, it contains information as to how to avoid 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 covered in the book on the basis of the latest research information and experience.

Every vocational agriculture department, technical institute, and college course in farm structures will find this book and the material it contains to be of great value. It should be included as a part of the reference material available to students who are dealing in design problems.

Lee P. Bender
University of Nebraska

Correction

The correct information concerning Youth Opportunity in America — Agrarianism which was reviewed on page 538 of the March 1970 issue is as follows: Corp. of the two sets of slides and tapes and the teaching guide are $50.00. Order from Visual Education, Inc., Suite 819, 1225 N. Street, N.W., Washington, D.C.
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 Telford)

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 Lenczewski)

Agricultural Education

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