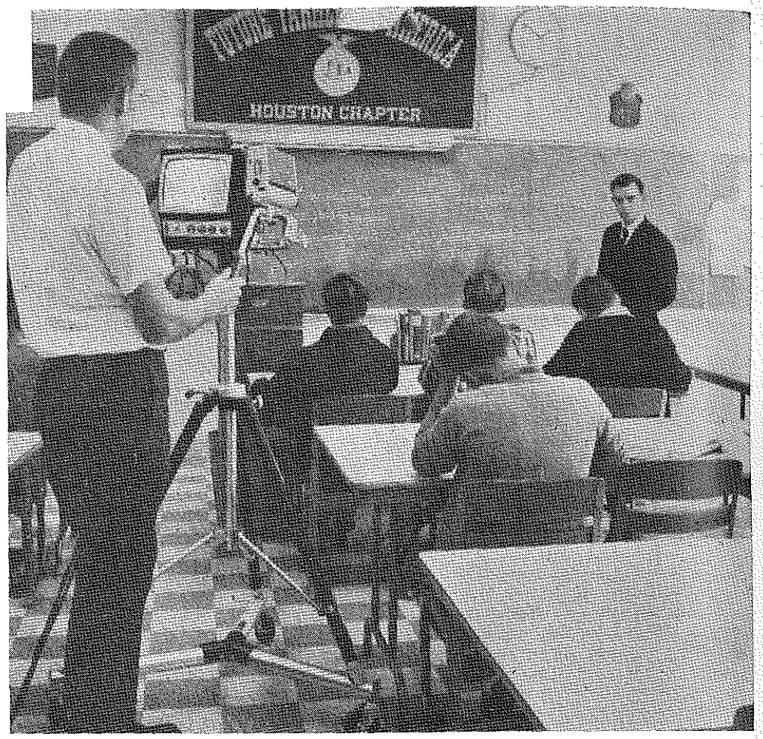
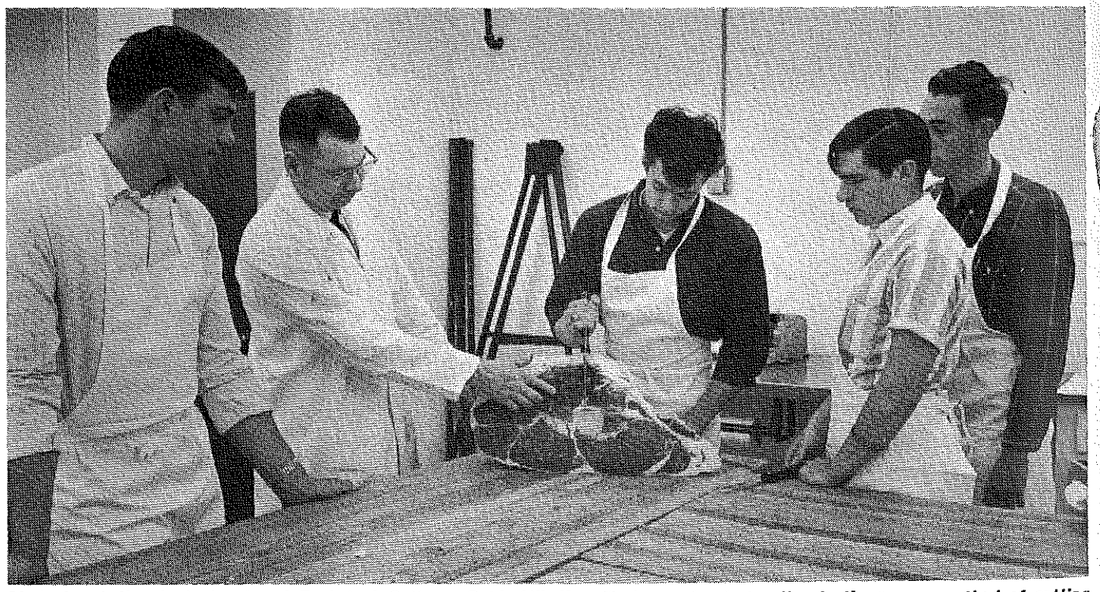
Stories in Pictures

ROBERT W. WALKER
University of Illinois



The video tape recorder is used to record and play back classroom presentations of student teachers at the University of Missouri. (Photo by Gene M. Love)



Students at the Agricutural and Technical College, Cobleskill, New York, receive instruction in the proper method of cutting beef. (Photo by Howard Sidney)

AGRICULTURAL EDUCATION

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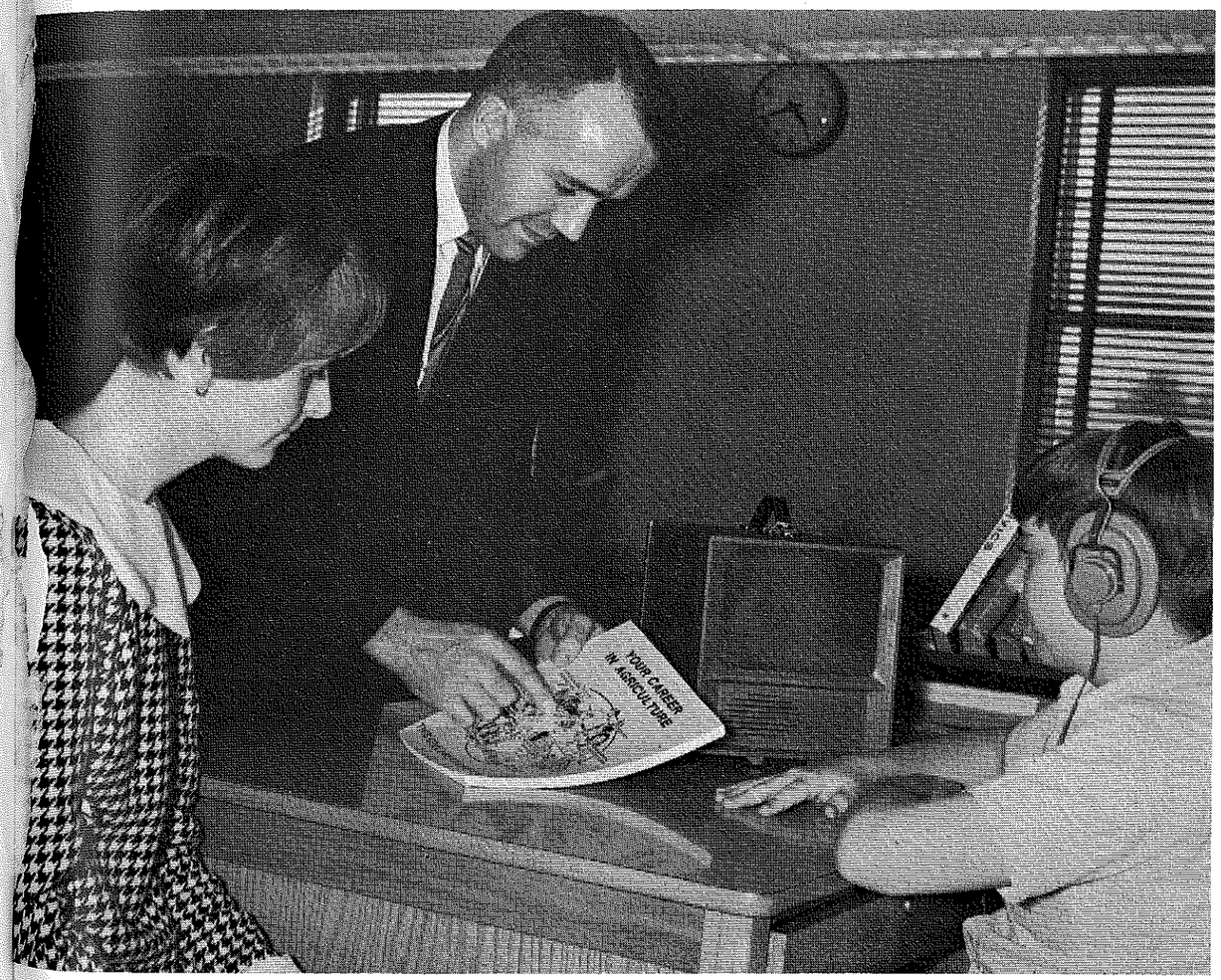

Featuring —

PROGRAM PLANNING AND CURRICULUM DEVELOPMENT

THE
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EDPRESS

Editorials

From the Editor . . .

Some Dimensions of Curriculum Design


J. Robert Warmbrod

It is a good bet that most undergraduate and graduate courses in agricultural education on curriculum development concentrate primarily on three major concerns: the selection of content (subject matter), sequence and grade placement of subject matter, and the allotment and distribution of instructional time to the various units, topics, or subject matter areas comprising the curriculum. This statement, in essence, emphasizes that the major concerns in curriculum development have to do with "what is to be taught" and "when it is to be taught."

But are these "what" and "when" questions sufficient for a sound approach to curriculum development? I propose that there are two additional questions confronting the curriculum maker which have a profound effect upon how one answers questions about content, sequence, and the allotment of instructional time. The first of these questions is "what is the purpose of agricultural education?" The second question is "what is the nature of the learning process?" Do not these "why" and "how" questions provide the context within which the "what" and "when" questions can be answered best?

Let's examine two curriculum development practices in agricultural education in light of this question. A long-standing principle of curriculum development in high school programs of vocational agriculture is that educational programs should be based on and derived from the needs, problems, and aspirations of individuals in local communities. Such an orientation to the selection of subject matter implies rather clearly that the central focus of education has to do with people—their needs, aspirations, and development—rather than subject matter per se. In accordance with this tenet of curriculum development, courses of study derived from textbooks or even statewide courses of study are not appropriate. On the other hand much discussion during the past few years about mobility of population and national and state manpower needs seems to indicate that

(Continued on next page)

Guest Editorial . . .

Look to the Future


James P. Clouse

To look forward intelligently is the key to the goals of agricultural education. To assess the issues and trends of today and tomorrow, to determine the qualities that responsible agricultural leadership demands in these times, and to learn how to cultivate such qualities in young men and young women are the proper tasks of vocational agriculture if it is to offer an educational program modern in its content and adequate in its scope.

How far have we come? What have we achieved? First, there have been many fundamental changes in the programs being carried out in vocational agriculture departments across the country. Objectives have been changed, more electives are available, and students may specialize in one or two areas of content. Increased emphasis in the high school is being put on people and how to work with them.

Second, it has been made very clear that quality of product is and will be the hallmark of the vocational agriculture program. Personal standards that require a high level of performance are developed for each student. The recent students and those currently enrolled have and are responding to the challenge.

Third, "creativity" has become a key by-word in many programs. Fewer teachers or students are willing to accept as dogma the practices of even a few years ago. Today's program is open-door in nature with the concept of creative change being an accepted way of life.

Fourth is a new level of social maturity among students enrolled in vocational agriculture. As evidenced by leaders in the FFA a large majority of the young people in vocational agriculture are mature, serious minded, and conscientious young people.

In these observations we find gratifying evidence of progress and the necessary elements for a continuing solid base for the future. We have made progress. We have far to go.

Looking ahead we can see the general outlines of the

(Continued on next page)

James P. Clouse is Associate Professor and Chairman, Agricultural Education, Purdue University, Lafayette, Indiana.

From the Editor . . .

more emphasis on state, regional, and even national planning of educational programs is appropriate. The fact is that local, state, and national needs should all be considered. But regardless of the base from which needs are projected, curriculum developers in agricultural education should continually remind themselves that the selection of content is conditioned by the purposes for which the subject matter is to be used. Over the years vocational agriculture's philosophy seems to have rightfully placed a high priority on the development of people. We should insure that this principle is not overlooked with increasing emphasis on state and national needs as criteria for determining curriculum content.

A second example illustrates well the relationship between the tasks of content selection and sequence and the question relating to the nature of the learning process. The analytical procedure—identifying what people do in the world of work—is used frequently in vocational agriculture as a procedure for selecting curriculum content. Basically this practice implies that learning is more effective when the learner sees meaning, function, and utility to the subject matter taught. Yet curriculum makers fail frequently to see the relationship between sequence of content and effective teaching. How often do we see courses of study where the first topic in a unit on operating gasoline engines is the history of gasoline engines? Why is it that one of the first things studied in livestock selection is history of the breeds? If we wish instruction to be meaningful to students, why begin units of instruction with a topic that has little if any meaning for most students? The fact often overlooked in building courses of study is that sequence and organization of content are closely related to the nature of the teaching-learning process.

The "what" and "when" questions pertaining to the selection and sequence of subject matter cannot be answered adequately unless they are considered within the broader context of questions pertaining to the purpose of agricultural education and the nature of the learning process. I suspect we frequently overlook or ignore the "why" and "how" questions when developing curriculums in agricultural education. —JRW

Guest Editorial . . .

task. We must develop vocational agriculture as an on-going program for the building of responsible leadership. In addition the following need to receive special attention in the immediate future.

First, the image of agricultural education that undergirds vocational agriculture is all important. As others see us so is our image. It has improved. It must continue to improve. Quality of both program and product are fundamental to this improvement.

Second, quality teaching personnel is crucial. Teachers of dintinction must be trained, placed, and retained. Emphasis must continue to be placed upon the ability of the school faculty to set the stage for enthusiastic and effective learning.

Third, our outreach to those young people who should prepare themselves for work in agriculture is of prime importance. Adequate individual and group guidance must be emphasized. We must intensify our efforts to reach qualified students who will respond to the challenge of a modern program of vocational agriculture.

Fourth, we must continue to update our present programs and develop new programs of vocational agriculture. The reshuffling of courses with no updating of content or method is not enough. Pragmatic innovation for effective learning is our goal. We dare not be satisfied with anything less.

Finally, by the very nature of the program our orientation is toward the future. As teachers we must be sensitive to the evolving themes of both agriculture and education and to the growing demands placed on the educated young man or woman.

It is to our own concept of the educational task that we must continually address ourselves. We must learn and grow. I believe we shall. I look to the future with firm resolve and high expectancy.

Themes for Future Issues

June	***Public Information Programs***
July	***Policy and Policy-Development in Agricultural Education***
August	***Guidance in Agricultural Education***
September	***Instructional Programs in Agricultural Mechanics***
October	***Instructional Programs in Ornamental Horticulture***
November	***Instructional Programs in Agricultural Supplies***
December	***Instructional Programs in Agricultural Resources***
January	***Teacher Education and Supervision***

THE COVER PICTURE

Paul Peterson (standing), doctoral candidate in agricultural education at the University of Missouri, works with a social studies teacher and elementary school pupil in Kansas City on an agricultural careers teaching experiment. The Audiscan projector on the table is being tested to determine its effectiveness for assisting students to learn career information. (Photo by Gene Love, University of Missouri)

Performance Criteria for Agricultural Instruction

RICHARD H. WILSON, Teacher Edition
The Ohio State University

Richard H. Wilson

Vocational education — particularly vocational agriculture—needs to provide an employment service for students who complete training. In a corollary effort toward occupational realism, we need to establish performance criteria for instruction and describe students in terms of performance capability.

There is little question but that vocational education in agriculture is already well into an era when the home farm no longer provides an employment haven for graduates. The sooner we organize a functional system for locating positions of employment, studying job descriptions, and making suitable placements of graduates the sooner we will be offering more valid programs of occupational education for agriculture.

Performance Capability

A requirement of a systematic employment effort will call for the description of our graduates in terms that make sense to the employer. A secretary is employed upon evidence that she is capable of typing forty words per minute. Employers must also regard our graduates in terms of performance capabilities. Providing such information is a game at which we have had little experience. For the most part we have been content to note that a student has completed vocational agriculture and comment on the character and industry displayed. Perhaps for one or two of each 100 students we could proudly note that they had achieved the state farmer degree.

We must ask what our graduates are prepared to do. What operations are they prepared to perform? How well can they perform? It is time we began to secure experience and develop a capability for describing our students in terms that will help sell their talent. In so doing we will also provide them a more realistic knowledge of their competencies.

Any system for the description of performance capability will need to provide information concerning the operations which can be performed and how proficient the person is. Since many students will need to be described, we need several classes or descriptive categories which will account for all students and have application to numerous occupational operations. Once categories are established, it may become possible to classify new students according to performance potential after suitable performance aptitude tests or subjective evaluation. Eventually, we should develop rather precise means for the valid evaluation of performance capability. For some operations such as welding, the level of performance may be easily defined. For other more inclusive tasks such as farm equipment operation, the level of performance may need to be more generally characterized.

Levels of Performance

As a beginning effort, I propose the establishment of four descriptive levels of performance capability.

—Competent Performance: The individual is able to demonstrate the desired occupational performance independent of the direction or assistance of others.

—Capable Performance: The individual is able to demonstrate the desired occupational performance when provided some direction or assistance.

—Adequate Performance: The individual is able to demonstrate the desired occupational performance when provided considerable direction or assistance.

—Acceptable Performance: The individual is able to demonstrate the desired occupational performance when provided constant direction or assistance.

For operational use these criteria need to be simplified. The following are suggested: Level I, Competent Performance—No direction or assistance required; Level II, Capable Performance—some direction or assistance required; Level III, Adequate Performance—considerable direction or assistance required; and Level IV, Acceptable Performance— constant direction or assistance required. While I am not particularly satisfied with the terminology, these definitions will at least serve to give an idea of the concept. The application of these definitions might be illustrated with the operations of elementary welding. Level I, the individual is able to complete elementary welding operations with no direction or assistance required; Level III, able to accomplish elementary welds with considerable direction or assistance required.

Most will readily accept Level I as a desirable performance criteria; however, it is doubtful if many senior students of vocational agriculture would be so classified relative to most farm or agricultural occupational operations. While some may question the need for two middle classes, I like to retain Level II as appropriate for the better graduates of vocational agriculture with Level III appropriate for the average student. Some will ask why anyone

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Vocational Horticulture in a City School

AVERY GRAY, Supervision
Indiana Department of Public Instruction
and
DALE RIGGS, Teacher
Indianapolis, Indiana

Harry E. Wood High School, five blocks from Monument Circle, is located in the inner-city area of Indianapolis, Indiana. Because of its location the school faces all the problems of the inner-city. A large percentage of the school's students are enrolled in a general or college prepatory program, yet less than 30 percent will enter college or post-high school education. A frightening number of students drop-out or fail. Vocational education has become one of the school's main tools for giving real meaning to education for many of the students.

Employment Opportunities

Indianapolis has an unusual need for horticulture workers. The southern portion of Indianapolis and Marion County was settled by families who grow a large amount of vegetables and flowers in greenhouses. Indianapolis has more golf greens per capita than any city in the nation. Also, workers are needed in such occupations as landscape crewmen, nursery workers, arboriculture workers, golf course workers, lawn service, park and grounds keepers, fruit and vegetable producers, food processing workers, flower shop workers, and garden center workers.

Program Development

The administration and staff at Harry E. Wood High School felt there was a need for horticulture in its program of vocational education. Proposals to establish a program in horticulture and four other areas of vocational education were submitted in the spring of 1967 to the Vocational Education Division of the Indiana Department of Public Instruction. In June 1967, funds for the establishment of programs for students with special needs were granted to initiate the program.

A graduate of the Purdue University School of Agriculture with seven years experience as a farm manager and farm operator was employed to initiate the program and teach the courses. The newly employed instructor spent the first semester of 1967-68 becoming acquainted with the school and planning the program. He visited other schools with programs for students with special needs to gain ideas that could be used. An extensive visitation program was undertaken to observe vocational horticulture programs in Indiana and other states. The instructor spent much time with horticulture businessmen in the Indianapolis area to get their ideas about the proposed program and the qualifications desired in employees.

The school had a small greenhouse which had been used by the science department. The greenhouse is now used for science and horticulture. A large locker room of approximately 1,500 square feet is being used as a classroom and shop. An extensive line of equipment was purchased including lawn mowers, fertilizer spreaders, wheel barrows, rakes, hoes, shovels, and many other small tools which could be used by the horticulture students.

Instruction

Students in the horticulture program are in class three hours each day. This plan allows the instructor to teach two classes and have enough time to take short educational trips to local horticulture businesses. The schedule also allows time to accomplish activities which develop occupational competence. The classes take care of the school grounds during the school year and are making long-range plans for relandscaping the school grounds.

In addition to the school and home-centered experience programs, a working agreement was made with the Indianapolis Park Department to take students to the city parks for actual work experience. The city parks proved to be very satisfactory laboratories. The students enjoyed doing a job which would result in something they could be proud to have had a part in.

The school's administrative staff decided that students could receive a science credit by taking vocational horticulture. The program was explained in all biology classes and a student assembly program was conducted to introduce each of the new vocational areas at the school to the entire student body. Thirty students indicated an interest in the horticulture program. It was possible to arrange schedules for thirteen of these students to take the first course during the second semester of 1967-68.

The students worked in the classroom and the greenhouse during the cold weather. One of the class projects was to distribute and care for potted plants in as many of the classrooms as possible. As soon as the weather permitted in spring, students moved outdoors to the school grounds to pick up trash and clean the lawn area. The class pruned all the shrubs and removed dead material. All of the lawn was fertilized and some portions were reseeded. The students enjoyed learning to operate lawn mowers, trimmers, and other equipment on the school grounds.

With the use of work study funds, the students were offered jobs with the Indianapolis Park Department for the summer. This program allows a student to work under the supervision of a school representative and his employer. Students were able to earn some of the money needed for school expenses. Five students chose to take part in the work study program during the summer of 1968. Most of the students are being offered jobs when they become eighteen.

Avery Gray

Dale Riggs

Avery Gray is Assistant State Supervisor of Agricultural Education, Indiana Department of Public Instruction. Dale Riggs is Vocational Horticulture Teacher, Harry E. Wood High School, Indianapolis, Indiana.

Students placed with the Indianapolis Park Department for occupational experience demonstrate their skill with a bed of geraniums. Their teacher and the Park Department Supervisor supervise their work.

Students enrolled in the Vocational Horticulture Program at Harry E. Wood High School are proud of this flower bed which they planned and maintained in one of the most beautiful parks in Indianapolis.

Future Plans

Plans are being made to expand the horticulture program by adding more teachers and facilities. Search is underway for space for a field laboratory to grow shrubs and flowers including demonstration plots. It is felt that this will show students, parents, and others in the community how to have green grass and shrubs around their homes. In addition, the homes of some students are being developed as demonstration homes to show what can and is being done to provide urban beauty.

Many of the horticulture business associations are helping to develop the program. Although the horticulture program at Harry E. Wood High School is small in comparison to its potential, the direct benefits are already evident. Students overlooked by previous programs are being prepared to enter the world of work.

Performance Criteria for Agricultural Instruction

(Continued from page 261)

would employ a person described as Level IV. The answer is, they are being employed today. Much of our mill-hand or field-hand labor has traditionally been of this performance level. We must recognize that we will have students who deserve training but who may never hope to achieve beyond Level IV, at least upon initial employment.

Teaching Becomes Vocational

Let us return to an earlier thought concerning the use of performance tests for the establishment of performance potentials for students. Knowledge of student performance potentials would lead to a more realistic structuring of curriculum as courses and teaching become attuned to the development of appropriate levels of performance. Teaching in terms of behavioral outcomes would become second nature. Instruction would be directed toward the development of occupational performance and the instructional objectives would be the observable outcomes which culminate in the desired performance. Evaluation would become testing to measure performance capability. Teaching could hardly become more vocational than this.

But the greatest gain from the use of performance criteria comes from being able to describe graduates to employers in terms which provide recognition of useful talent. When we can do this we will be in a better position to locate and recognize employment positions which can be filled by our graduates. Knowledge of these will in turn feed back and strengthen our curriculum. Vocational agriculture can be revitalized by efforts to describe student performance and place graduates in positions of initial employment.

Family-Centered Adult Education Programs

DOUGLAS PATTERSON, Research Assistant
University of Illinois
and
GERALD R. FULLER, Teacher Education
University of Vermont

As our nation enjoys economic prosperity one large segment of the population often bemoans that "times are getting harder." This segment, labelled as the economically disadvantaged, is not sharing in the prosperity of our country partly because the nation's educational system has not adequately prepared them to share in it. Nearly fifteen million of these economically disadvantaged people live in rural areas that are presently being served by high schools that offer instruction in agriculture.

Obligation and Challenge

It is the professional obligation of teachers of agriculture to attend to some of the special educational needs of these people. The task of helping to meet the educational needs of rural disadvantaged families lies squarely on the shoulders of local teachers of agriculture for the following reasons: the agricultural occupations departments are committed to serving the entire school community, both adults and youth; teachers of agriculture are aware of the importance of occupational training in high school and post-high school education; and teachers of agriculture are usually the only members of the school staff who are familiar with the home situations of a large number of the rural families in the school districts.

To meet this challenge, teachers of agriculture must place more emphasis upon working with disadvantaged families as family units. Also, considerably more time than is now being spent must be devoted to working with family members at their homes rather than only in group meetings at a school. A new look is needed in adult education programs for the economically disadvantaged.

A project was initiated at the University of Illinois to study the characteristics of economically disadvantaged rural families and develop methods and materials for a vocationally oriented, family-centered educational program for rural disadvantaged families. The educational program is being designed so it can be implemented by local teachers of agriculture. In this article, the project will be described as "Project REDY."

Individual Instruction

It was found that rural economically disadvantaged persons were usually semi-social isolates who did not join organized groups and attended very few meetings. Thus one of the best ways to reach economically disadvantaged families is through individual contacts made at their homes. Teachers of agriculture were found to be the most qualified teachers in a school system to teach these people through this method. Instruction in the homes of these families was important in that it gave access to teaching the whole family and not just the child. Studies show that the chief molding influence on a child is his home life. Only by changing his home environment can we hope to have a lasting influence on the child.

During Project REDY it was found that disadvantaged families responded very well to home instruction. Contrary to the initial fears of the teachers of agriculture, these families were very responsive to a person who exhibited interest in them and their children. The economically disadvantaged had few friends or visitors and were very appreciative when someone from the school was interested enough to come to their home and talk with them. An often heard comment was, "This is the first time anyone from the school ever came by except when one of the kids was in trouble at school."

Group Instruction

It was also found that economically disadvantaged families would eventually respond well to group meetings that were structured to their needs. The problem was getting them to attend meetings. Economically disadvantaged persons were usually embarrassed when

(Continued on next page)

Douglas Patterson

Douglas Patterson is a graduate research assistant at the University of Illinois. When this article was written, Gerald R. Fuller was Assistant Professor of Vocational and Technical Education at the University of Illinois and Associate Director of the research project, "Development of Human Resources of Youth Through a Vocationally Oriented Educational Program for Disadvantaged Families in Depressed Rural Areas." Project REDY, the shortened title of the research project conducted by the Division of Agricultural Education at the University of Illinois, is funded by the Bureau of Research, U. S. Office of Education. Dr. Fuller is now Head of the Agricultural Education Department, University of Vermont.

Gerald R. Fuller

Businessmen Indicate . . .

IMPORTANT COMPETENCIES IN ORNAMENTAL HORTICULTURE

CARROLL L. SHRY, Jr.
Teacher of Agriculture
Frederick, Maryland

Carroll L. Shry, Jr.

The study on which this article was based was conducted by Mr. Shry when he was a Graduate Assistant in Agricultural Education at West Virginia University.

An educational program for ornamental horticulture should be developed on the basis of the competencies deemed important by businessmen in the industry. To determine the competencies needed by high school graduates to become gainfully employed in the horticulture industry, 100 members of the Maryland Nurserymen's Association were surveyed. They were asked to rate the degree of competency needed in various areas of ornamental horticulture instruction. Most of the nurserymen indicated a preference for employees who had instruction and work experience in ornamental horticulture prior to employment.

Comprehensive Training

Nurserymen were of the opinion that students needed comprehensive training in the following competencies: identification of plants; identification of plant diseases and insects; propagation of plants by cuttings, seeds, grafting and budding; selection of soils for horticultural practices: lawn care and maintenance; planting and pruning ornamentals properly; and forcing plants to bloom.

General Training

A general degree of training was recommended by the nurserymen for the following competencies: controlling weeds in horticultural crops; digging, pruning and transplanting ornamentals; growing house plants in the greenhouse; growing vegetable plants for the commercial market; caring for cut flowers; arranging flowers; growing bulbs and corms; growing annuals and perennials; soil sterilization; composts and manures; mixing soluble fertilizers; potting soil mixtures; and watering plants in the greenhouse and nursery.

Horticultural mechanics, basic landscaping, land surveying, business techniques, operation and maintenance of engines and machinery, and interest in one's work were additional competencies and attitudes suggested by the nurserymen.

Family-Centered Adult Education Programs

they attended "middle-class" meetings. They had learned to avoid all meetings and often were suspicious of all educational institutions. This problem required much patience and persistance on the part of the teacher. Good rapport had to be developed between the family and the teacher before they would attend meetings. Such rapport had to be developed through continuous individual instruction.

Even after much work through individual instruction at the home of a family and obtaining a commitment from them to attend a meeting, the family did not always attend. When asked why they did not attend, the family members responded with a number of rationalizations. Some of the more common reasons given were: a member of the family was sick, roads were too muddy, had to work late, or just forgot the meeting. These reasons may have been perfectly legitimate in the value system of the disadvantaged families. Much effort is required to change these attitudes. The teacher did not despair when success did not come easily. He became increasingly dedicated to the service of these people.

Once they attended a meeting and realized that some of their specific problems were being treated, they developed an interest and began to participate freely. They were willing to discuss problems when they understood that other families at the meeting were in situations similar to theirs. The urgency of their problems and their desire to solve them gave impetus and direction to the program.

A few families did not attend a meeting after working with them individually for over twelve months. But all families, including the ones who did not attend a group meeting, benefited from a well-planned educational program of coordinated group and individual instruction.

Summary

Teachers must work with individual families through home visitations before a group meeting program can be started. The group meeting programs should be structured to help solve the immediate needs of the families. The structure of the group meetings should not be too rigid. Instructional material should be simple. It is necessary for the teacher to meet with each individual family after each meeting and help the family apply the teaching to their specific situation. It is especially important to carry the instruction to the families who do not attend the group meetings. Even families who refuse to attend meetings welcome individual instruction and seek advice from the teacher.

Pre-Employment Laboratory Training in Farm Power and Machinery

MARVIN J. CEPICA, Teacher of Agriculture
Dimmitt, Texas
and
ELROY OTTE, Graduate Student
Texas A & M University

Marvin J. Cepica

What do you do when you live in a community where the average farmer has a gross income in excess of $50,000 but cannot get his tractor repaired as quickly as needed because the implement dealer cannot hire enough good mechanics? Are the schools really meeting the needs of students and the community?

These are only two of many questions that vocational agriculture teachers face today. We are aware that all students enrolled in production agriculture will not become farmers. Most vocational agriculture students have benefited from studying vocational agriculture whether their future employment is farming, an off-farm agricultural occupation, or a job indirectly related to agriculture. But what about those students whose needs are not met fully by production agriculture? Isn't there something we can do to serve better our students and the community?

New Program

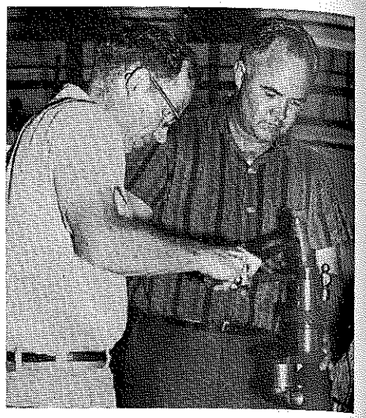
The Dimmitt, Texas, schools developed a new program in vocational agriculture in response to these and similar questions. First, an occupational survey of the community's immediate and projected needs for farm machinery mechanics was made. A study was also made of the school to identify the resources available for a new program. The result was a request to the State Director of Agricultural Education for approval of a new vocational agriculture program termed Pre-Employment Laboratory Training in Farm Power and Machinery. The major objective of the new program is to supply farm machinery dealers in the community competently trained mechanics, mechanic helpers, and machinery repairmen.

Instruction

Instruction in farm power will be used to illustrate how the program in Pre-Employment Laboratory Training in Farm Power and Machinery is organized and operated. In teaching farm power, our intent is to teach each student the fundamentals of engine operation and overhaul. Safety and the proper use of tools are stressed.

Instruction at the beginning of the school year includes units on history of engines, shop safety, and tools and equipment used. When actual work on engines is started, demonstrations must be used to teach overhauling. Small gasoline engines are excellent to use in the beginning because of their size and the fact that the basic theory is the same as in larger engines. After an in-class overhaul is completed, each student should individually overhaul a small gasoline engine.

After the completion of this project, another in-class overhaul using a tractor or irrigation engine should be made with the students working in a group with the teacher. Additional instruction in theory would be provided also. This should be followed by shop overhaul with one engine for each two students. Engines are obtained from farmers or implement dealers with the agreement that the owner pays for the parts needed. During this phase of the instructional program the teacher should work with students on an individual basis providing demonstrations and assistance as necessary. Groups of students should be called together for special demonstrations and instruction when unusual and interesting situations are found. Each tractor or engine should be completely reconditioned and painted before leaving the shop.



William Whitfield (left), Teacher of Agriculture at Levelland, Texas, and Elroy Otte, the co-author of this article, overhaul a tractor engine during a summer farm mechanics institute. Mr. Otte is a former teacher of agriculture at Dimmitt, Texas.

Administration

The Texas Education Agency has set minimum standards for Pre-Employment Laboratory Training Programs. Standards are set for tools, equipment, and space. Teachers must hold a valid teaching certificate for vocational agriculture. To be eligible for enrollment in the program, students must be 16 years of age, be in grade 11 or 12, and have an occupational objective in the area of farm power and machinery. Students must spend a minimum of three hours per day in the shop.

As more and more schools develop programs of this nature there is a need for colleges and universities to provide special pre-service and in-service courses to prepare teachers for these programs. Three-week institutes for teachers in tractor mechanics and machinery service and repair are conducted by universities in Texas each summer. In addition, we find that most mechanics are happy to give advice and recommendations to teachers involved in Pre-Employment Laboratory Training in Farm Power and Machinery.

INSTRUCTIONAL MATERIALS AND EFFECTIVE TEACHING

JASPER S. LEE, Teacher Education
Mississippi State University

Jasper S. Lee

The teaching of knowledge and skills in agricultural occupations can be tremendously facilitated through the proper use of appropriate instructional materials. An ever-expanding field of agricultural knowledge necessitates teaching procedures which expedite both the teaching and learning processes.

Effective Teaching

Using instructional materials does not necessarily result in effective teaching. Effective teaching is not easily defined; it is an elusive concept. Effective teaching is dynamic. It unfolds what is to be learned in a manner that is readily understood by the learner. Instructional materials contribute to effective teaching. They enrich and accelerate the learning process by appealing to as many of the senses as possible—sight, sound, touch, smell, and taste. Reliance upon verbalism is reduced to a minimum.

Teachers need to be thoroughly acquainted with instructional materials and how to use them. Effective use of instructional materials involves more than merely projecting something on a screen. There must be preparation and follow-up. Haphazardly arranged materials may actually hinder the learning process. Flashing pages of printed material onto a screen and requiring students to read it and copy it down can only end in disaster.

Instructional materials, whether publications, motion pictures, transparencies, models, specimens, or charts, do not reduce the teacher's work. Class preparation time may actually increase as will expenditures from the school budget. Additional preparation time and expenditures are justified when learning is more energetic, vigorous, forceful, and realistic.

Using Materials Effectively

Teachers must decide what instructional materials to use and when to use them if maximum outcomes are desired from teaching. Proper instructional materials are appropriate and meaningful. Appropriateness also has relevance to time of use. The effectiveness of appropriate materials can be greatly diminished by using them at the inopportune time. Meaning is enhanced by timing. Using a motion picture on the irrigation of corn would certainly be more meaningful if shown when corn irrigation is studied rather than when studying corn varieties.

The manufacturers of educational equipment have made tremendous advances in technology. Impetus has been added to their innovations by increased funds for instructional materials. Teachers and administrators need to investigate thoroughly the educational worthiness of new materials before purchasing them. The question "Will these materials facilitate the educational process?" should be asked and satisfactorily answered before instructional materials are bought.

It is not necessary for teachers to rely solely upon instructional materials that are commercially prepared. Some of the best instructional materials are constructed by the teacher. Students can be of considerable help to the teacher in this endeavor. Teachers of agriculture are fortunate to have access to tools that facilitate well constructed teaching aids. Teachers who use poorly constructed teaching aids should not expect any better than poor work habits of their students. Much learning is by example and imitation.

Learn by Doing

There is a great need for additional emphasis upon the proper use of instructional materials at both the graduate and undergraduate levels. But an additional course will not solve the problem. Many agricultural occupations teachers with the greatest expertness in using instructional materials gained their skill through self-study and conscientious classroom preparation. It is very important that teachers know that instructional materials alone do not comprise the total education process. Showing a motion picture is to help the teacher, not to give him a chance to slip out of the classroom for a few minutes.

People learn to do what they do. If students practice using a teaching machine, they learn to do just that—use a teaching machine! Any other learning may be incidental. The purpose of any activity needs to be fully explained to the learner. Students are attracted by hardware that can be manipulated and they may express misleading enthusiasm for what they are doing and not for what they are supposedly learning. Of course, enthusiasm for manipulative activities can often be just the spark that is needed to incite additional learning and interest in educational activities.

Instructional materials should exist in the classroom for only one purpose—for more effective teaching and learning. Greater and more permanent learning comes about in a shorter time when proper use is made of instructional materials.

Harry J. Hoerner

Competencies in Electricity Needed by Farmers

HARRY J. HOERNER, Teacher Education
The Pennsylvania State University
and
CLARENCE E. BUNDY, Teacher Education
Iowa State University

Clarence E. Bundy

The use of electricity on farms in the United States is increasing about 8 per cent per year. Today many farms are almost totally electrified. No one can dispute the role played by both private and public electrical industries in modern farming. Because farmers have adopted many electrical labor saving devices, a study was undertaken to identify the competencies in electricity needed by farmers.

THE STUDY

A panel of specialists in farm electricity collaborated in the construction of a questionnaire which included eighteen electrical understandings and twenty-six abilities pertaining to electrical work on a farm. The questionnaire was presented to Iowa farmers who were requested to indicate the degree of competence (very much, much, some, little, or none) they needed and the degree of competence they possessed for each item.

Farmers were also asked to provide information about their farm business, their formal education and instruction in electricity, the kilowatt-hours of electricity used during one year, and the electrical equipment used on their farms. One group of farmers participating in the study was selected at random. Managers of Iowa Rural Electric Cooperatives were asked to nominate farmers who were outstanding farm managers and used large amounts of electricity. This group was designated as outstanding farmers in the study.

The average (randomly selected) and outstanding farmers were much alike in regard to years in farming, years of schooling, and years of vocational agriculture completed in high school. The outstanding farmers used more electricity, had more animal units per farm, and operated more acres than the average farmers.

COMPETENCIES NEEDED AND POSSESSED

Generally, competencies rated high by outstanding farmers were also rated high by the average farmers. Likewise competencies rated low by one group were rated low by the other group. The following list indicates the understandings and abilities which farmers rated as most needed. The difference between scores indicating competencies needed and competencies possessed was less for the outstanding farmers than for the average farmers. This indicates that outstanding farmers were closer to having met their training needs in electricity than were the average farmers.

Understandings Most Needed

How pressure, time and limit switches, thermostat and humidistat controls, and magnetic relays operate in controlling mechanized feeding equipment.
Proper methods for grounding the service entrance and appliances.
Relationship of wattage and horsepower.
Why one should not operate light switches or any other electrical devices while in the bathtub.
Reasons why distance and load influence wire size.
The differences in types of electric motors.
When a circuit is overloaded.
Motor overload protection devices.
The purpose of the National Electric Code.
The operating principles of the electric motor.
Volts, amperes, watts, and ohms as units of measure of electricity.
Types of insulation for electrical conductors and where they should be used.

Abilities Most Needed

Select the correct type of electric motor for a specific job.
Install all electrical wiring and fixtures in a building such as a farrowing house or milking parlor.
Determine correct pulley size for motor and equipment based upon motor speed and required equipment speed.
Change a dual voltage motor from a low to high voltage or vice versa.
Install the wiring to a silo unloader or other major piece of electrical equipment on the farm.
Select wire size for circuit.
Select correct size of two-element (Fustron) fuse protection for an electric motor.
Service and clean an electric motor.
Use some kind of horsepower formula in determining power of electric motor.
Design an electrical system including circuits, fuse protection, receptacles, switches, appliances and equipment.
Completely wire a farm home.

NEED FOR TRAINING

It is evident from the study that farmers desire more training in electricity. They particularly want to learn more about the understandings and abilities listed in this article. Farmers indicated little interest in instruction pertaining to the ability to figure an electrical bill from the kilowatt-hour reading or the ability to tie an Underwriters' knot.

Sixty-three per cent of the outstanding farmers and 69 per cent of the average farmers indicated they had not participated in organized instructional programs in electricity. The one-third of the farmers who had participated in organized instruction in electricity indicated this instruction was quite equally divided among vocational agriculture adult and young farmer courses, county agricultural extension programs, and programs of public and private power suppliers.

Public and private educational agencies supporting agricultural education are justified in teaching more electricity than before. Public schools through vocational agriculture programs, agricultural extension, and power suppliers are the agencies most likely to provide this instruction.

What Happens When Traditional Programs are not Appropriate?

RICHARD T. MEDER
Vocational Agriculture Coordinator, Washington High School
Phoenix, Arizona

Richard T. Meder

I imagine many vocational agriculture departments are experiencing change. This is certainly true with agricultural education in a city school. What happens when the traditional program no longer meets the needs of students? Do you change the program, maintain the status quo, or change jobs? Do you discard the old program, keep portions of it, or return to school and retool yourself and the program?

• The City

My department of vocational agriculture is located in a school in the northwest section of Phoenix, Arizona. Over 90 per cent of the land area in the school district is occupied by homes and small non-agricultural businesses. Many persons would conclude that our school should not offer agriculture, or at best only horticulture or landscaping. We have a one-teacher department of vocational agriculture in a school with 2,000 students, none of whom live on a farm or ranch. Enrollment in agriculture is fairly stable at approximately 85 boys and girls each year.

I decided not to change jobs but to complete additional graduate work and develop a program of agricultural education suited to the school and its students. The program we are operating is described in this article. All courses described are taught as semester courses.

• First Year

A two-semester exploratory course is open to all freshmen. Enrollment is limited only by the students' interest and the number of chairs in the classroom. Approximately 35 students enroll each year. Horticulture and landscaping are taught along with livestock, crops, soil, home garden, poultry, mechanics, and FFA.

One hundred hours of work experience in an agricultural activity are required. The home garden unit is conducted on a nine-acre school leased land laboratory located one and one-half miles from the school. Supervised farming programs are encouraged when practical. A beef cooperative is operated by students. Also students raise and process 175 fryers in the shop each year.

After this course, students are selected for other courses on the basis of their occupational objective. Boys enroll primarily in agricultural mechanics courses but both boys and girls enroll in other courses.

• Second Year

Agricultural Mechanics I is offered the first semester. The course is taught by our industrial arts metal shop teacher who is also a certified vocational agriculture teacher. This eliminates the sharing of a shop by two teachers and the necessity to offer two programs. Work experience of 150 hours is required. Supervised farming programs are optional. Experience on the land laboratory, in the greenhouse, and campus beautification projects are used for work experience.

Agricultural Science I is taught the second semester. I teach this course which includes instruction in feeds and feeding and units pertaining to the various types of livestock.

• Third and Fourth Year

One-semester courses on Agricultural Science II (Field Crops) and Economics of Agriculture are taught on alternate years. Requirements for work experience are expanded to 200 to 300 hours each year. Farming programs may be used in lieu of work experience providing students meet minimum standards. I teach these courses.

Agricultural Mechanics II and Agricultural Mechanics III, both one semester courses, are taught on alternate years by the industrial arts teacher who is certified to teach agriculture. The content of these courses is modified to meet the needs of the local situation.

• Fourth Year

I teach a two-semester course called Agricultural Cooperative Education. The course, structured similar to cooperative programs in other areas of vocational education, is open to seniors who have completed at least one year of prior instruction in agriculture. From 16 to 18 students are selected for this program. Students usually are working as veterinary assistants or horse trainers or in garden centers, feed lots, agricultural mechanics, dairy industry, or the poultry industry.

My teaching load for the entire program is three 55-minute periods each day plus two hours for coordination and supervisory visits.

• FFA

FFA is an intracurricular activity of our program. We participate in state field days, judging contests, and other activities. Students enrolled in the Agricultural Cooperative Education program wear FFA jackets. We aren't worried about a name change, whether girls will help or hurt the organization, or if notebooks from the supply service with change from dark blue to psychedelic colors. We know that we have the best program and youth organization to offer our students.

• Sharing Ideas

I will share descriptions of our courses and other activities if you request them. I welcome the opportunity to share ideas with other teachers. I know that agriculture means more than farming and that it has a place in city schools.

Agricultural education in your school or mine will be no better than we wish it to be.

A Comprehensive Vocational Agriculture Program

RAYMOND A. HOLT and GLEN R. MYERS
Teachers of Agriculture
Portland, Tennessee

In keeping with the trends in vocational education, many high schools across the nation have changed or are in the process of changing the vocational agriculture curriculum. Change has occurred both in subject matter and in curriculum design. Vocational agriculture departments that do not effect such a change may become obsolete in the near future.

NEED FOR CHANGE

As a result of studies that began in 1960 at Portland (Tennessee) High School, school administrators, vocational agriculture teachers, the guidance counselor, and the advisory council found that a more comprehensive instructional program in vocational agriculture was necessary. Realization of several factors brought about such a change. First, many high school programs have fallen behind the requirements of the "world of work," particularly in schools with a small enrollment such as Portland High School. Second, many students were inadequately prepared for employment in careers consistent with their interests, abilities, and opportunities. Third, the vocational agriculture program needed to be expanded to include training in production, distribution, processing, assembling, servicing, repairing, and in some cases commercial and professional careers. Finally, with rapid technological change in agriculture and education, the vocational agriculture program had simply become "out-dated."

Because of these and other factors, a new approach was taken in planning the agricultural education program. The curriculum was patterned after the "block system" which included courses in agricultural science, basic agricultural mechanics, advanced agricultural mechanics, and a course designed for first-year agriculture students which is exploratory in nature. A course in agricultural marketing with cooperative education as an integral phase was added also. The program was made available to all students with the content structured to meet as many individual needs as possible.

OBJECTIVES

The primary objective of the revised program is to offer a comprehensive instructional program to meet the vocational objectives of all students. Our aim is to develop students so they are competent to enter an agricultural occupation. Specific objectives are: to continue meeting the needs of those students with production agriculture objectives; to offer exploratory instruction in careers; to expand instruction in agriculture to include the distribution, servicing, processing, assembling, repairing, and marketing of supplies and produce; to improve mechanical skills through the use of trades craftsmen as special teachers; and to offer instruction which will motivate potential dropouts to complete high school and qualify for employment.

PROGRAM PHASES

The vocational agriculture program at Portland High School is divided into four phases. All four phases are designed for the "block system" of instruction. The first phase is exploratory in nature and is offered only at the ninth grade level. Students may elect all other phases in any year while in high school.

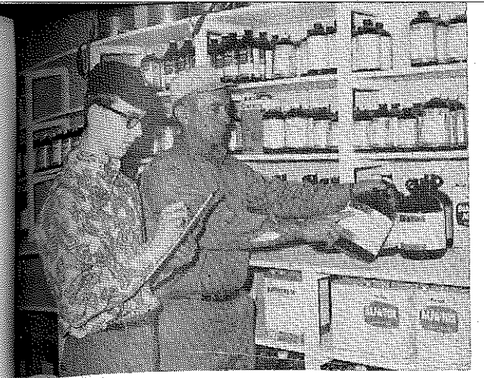
First Phase

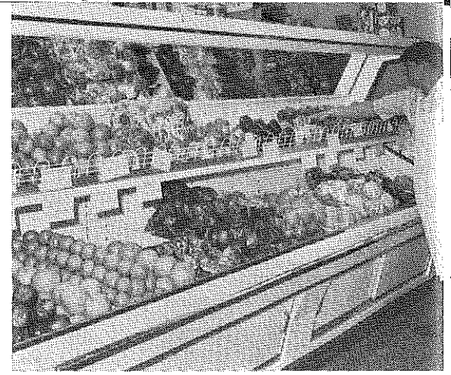
Students in the first phase receive instruction in careers. An occupational interest inventory is administered to each student after which the student makes a detailed study in his highest ranking occupational area. Resource persons discuss careers, outlook for occupations, and requirements for occupations. Approximately one semester is devoted to exploratory study. The first phase also includes leadership training and planning for the proper use of supervised farming or supervised work experience programs. An introduction to the animal, plant, and soil sciences is also given. The first phase makes the student aware of his strengths and weaknesses. By determining interests and needs of students, plans can be formulated for future high school courses. The guidance counselor works closely with students in this phase of the curriculum.

Raymond A. Holt

Portland (Tennessee) High School has an enrollment of 380 students. One hundred and fifty-seven of these students are enrolled in the seven vocational agriculture courses offered in 1968-69. Portland High School, located 35 miles north of Nashville, serves an area of approximately 5,000 population.

Glen R. Myers





Students enrolled in Phase Four of the vocational agriculture program at Portland (Tennessee) High School get supervised occupational experiences in local businesses.

Second Phase

Development of scientific attitudes toward agriculture constitutes the second phase of the program. Students in the tenth through twelfth grades may elect this phase of the program. This phase is designed for students in production agriculture and other areas of agriculture in which a basic knowledge of the animal, plant, and soil sciences is essential. The curriculum is structured to emphasize principles which may be applied to any situation in production agriculture. For example, basic principles of fertilization of field crops are taught rather than fertilization of individual crops such as corn.

The following instructional units are offered in the agricultural science course: animal science—selection and judging, reproduction, nutrition, diseases and parasites, and management practices; soil science—soil formation, land judging, fertilization, and erosion and conservation practices; plant science—rates and dates of seeding, fertilization, tillage practices, control of pests, diseases and weeds, and marketing.

Phase Three

In keeping with the ever-increasing mechanization in agriculture and related areas, phase three of the program is designed to develop marketable skills and basic understandings in agricultural mechanics. Basic principles are taught in the classroom prior to actual practice and experience in the shop under the supervision of the vocational agriculture teacher and a special craft instructor for each instructional area.

Craft instructors are an integral part of phase three. These instructors have at least fifteen years of experience in the area in which they serve as instructors. Since the vocational agriculture teacher cannot be proficient in all areas of the program, the special instructors are used to supplement the teacher's knowledge and skills in mechanics.

Phase three is divided into two courses — basic agricultural mechanics and advanced agricultural mechanics. Each area in basic agricultural mechanics includes instruction for six weeks. These instructional areas are carpentry, plumbing, electricity, oxy-acetylene and arc welding, and small gasoline engines. To make instruction more realistic and practical, a small building is constructed, wired, and the plumbing installed.

Advanced agricultural mechanics is designed to teach the principles of operation, repair, overhaul, and tune-up of large gasoline engines and transmissions. Approximately one semester of the year is spent in classroom instruction on fuel systems, ignition systems, and charging systems. Students are given practical experience the second semester by actual work with large engines.

Phase Four

Phase four of the program is agricultural marketing and cooperative education for eleventh-and twelfth-grade students. Students in this program enroll in marketing the junior year and in marketing and cooperative education the senior year. Students are taught salesmanship, advertising techniques, the art of displaying merchandise, human relations, business organization and policies, and how to secure a job. While the student is enrolled in the cooperative program during the senior year in approved training centers, he is also given individualized instruction in his particular area of interest.

OTHER FEATURES

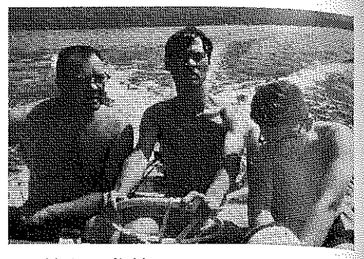
In the process of securing employment for students in the cooperative program, students are made aware of approved training centers. Employers then interview prospective student-employees. The employers also are involved in evaluating the cooperative program and the students' performance. The supervised occupational experience program is in its third year of operation.

An advisory council consisting of eight representatives from industry and labor serves in a consulting capacity for the program. The council is given responsibilities such as identifying learning experiences, improving materials and procedures in the program, locating training centers for cooperative students, and evaluating the program.

The vocational agriculture program at Portland High School operated as a pilot program for three years. It is now operated as a regular program in the school. Many changes have been made, and certainly more revisions are likely in years to come. The teachers and others involved feel that the program has met and will continue to meet the needs of the community as long as needed revisions are made.

Instruction in Conservation

FRANK T. VAUGHN, Supervision
New York State Education Department



Donald Sipp (left), conservation instructor, supervises one student in boat handling on Lake George while another student monitors the depth finder.

Not unlike persons in other states, the taxpayers of New York State have become increasingly critical of spiraling school costs. An apparent inefficiency frequently mentioned is the nearly complete lack of use of the school physical plant for more than two months each year. Recognizing this, the Legislature provided funds for a comprehensive study of possible ways of using school plants the year around. The pilot program described in this article was conducted as a part of the Extended School Year Project.

Courses in Conservation

Since 1963 a number of courses in vocational conservation have been started in New York. These courses prepare eleventh- and twelfth-grade students for entry occupations in forestry, wildlife management, soil and water management, and other related fields. Courses of study have been adapted as far as possible to employment opportunities in the general area from which students enroll.

Generally no attempt is made to develop complete competencies for a specific job but to develop basic competencies that are marketable in several fields. Students have been encouraged to pursue specific interests and to get work experience in the fields of their interest.

Pilot Program

During the summer of 1968, a pilot program was funded by the Extended School Year Project for an instructional program in conservation. The program was conducted at the Warrensburg Area Occupational Center which is a part of the educational program of the Warren-Washington Board of Cooperative Educational Services. This Board of Cooperative Educational Services operates two conservation courses. One course is provided in Washington County which is predominately a farming county. The other course is offered in Warren County which is in the southeast corner of the Adirondack Mountains. Warren County supports little farming and its economy depends largely on forest industries and outdoor recreation. The purpose of the pilot program was to demonstrate the feasibility and desirability of using the facilities and staff of an area occupational center to extend during the summer a program of the regular school year. Students were transported to the Occupational Center from the various local schools.

Conservation Instruction

Instruction during the five-week period was limited to units in operation and service of earth moving equipment and power boats. These units of instruction were chosen because the training led to locally marketable skills. Also it is impossible to provide time during the regular school year for adequate instruction in these areas. Adequate equipment was available since the Board of Cooperative Educational Services owns a boat, two bulldozers, and a backhoe. One day each week was allocated for boating instruction with the rest of the time used with heavy machinery. The regular instructor in conservation taught the course.

Fortunately a real project was available for earth moving instruction. This was the development of a beach and picnic area on the Schroon River about two miles from the Center. The site required substantial bulldozer work and some chainsaw and axe work to clear trees and brush. This phase of instruction included units on machinery and equipment safety, maintenance and adjustment of machinery, using machinery to clear brush and trees, and using the bulldozer to remove fill and establish grade.

Time was sufficient for each student to get considerable practice with the heavy equipment. Resource material from the New York State Conservation Department was used by each student to develop a plan for the area. Each student was required to prepare a rough map and a written plan.

Four sessions were devoted to the operation of the school's boat in Schroon Lake and Lake George. These units of instruction included launching and recovery, safety, emergency procedures, using the depth finder, and identifying the channel and other markers.

Evaluation

The instructor found the program very rewarding. Students were equally enthusiastic about what they learned. The School's administration was pleased and is planning to extend the program in 1969.

The concept of an extended school year is closely related to vocational agriculture's philosophy of instruction extended throughout the year rather than terminating at the close of school. The extended school year program provides a number of potential benefits to students. The "time in the bank" earned during the summer could be used for released time for work experience, for improvement in reading or mathematics, for enrolling in another course, or for study related to special interests. The extended school year program provides for more efficient use of physical facilities and for richer programs for students.

AN APPROACH FOR CONDUCTING RESEARCH ON AGRICULTURAL OCCUPATIONS

ROBERT W. RICHMAN
University of Idaho

Robert W. Richman

Robert W. Richman is Assistant Director of the State Occupational Research Unit at the University of Idaho, Moscow, Idaho. This article is based on research, "Study of Agriculturally Related Occupations in Selected Counties of Idaho," conducted by the State Occupational Research Unit at the University of Idaho.

Studies have rather consistently confirmed the need for vocational agriculture to expand to include agri-business, agri-service, and other special areas of agriculture. Although the extent of agricultural background may vary, it is nevertheless valuable as background for entry into more advanced jobs. Agriculture is not a field for some hypothetical few who are not academic. It is a field for all who may be interested in practical, productive occupations. This article is an attempt to describe agrarian occupations more effectively.

Background

The business world often speaks of business barometers, those statistical patterns for certain industries or goods which both describe and predict more general conditions. I propose we take this same approach in agricultural education to learn more about the needs in agriculturally related occupations.

One major reason for the popular opinion that agriculture is declining is the use of a faulty barometer. Census data concerning numbers of farm workers formerly served as an accurate index of agriculture. But as technology has produced complex agricultural processes and off-farm agricultural services, the census count of farmers has become a very poor measure of the opportunities in agriculture. A better occupational barometer is difficult to build and requires development of some new approaches.

An Approach

We desired to compare conditions in Idaho with research conducted elsewhere concerning off-farm agricultural occupations. We hoped to find among the studies certain consistent approaches which would make results comparable. But we soon found it necessary to refine research designs and procedures so that data would be directly comparable between states or areas.

The objective of research to identify off-farm occupations involved considerable fluctuation and difference between communities, employers, and interviewers. It was necessary to reduce this variation in the data. The first improvement was to remove the agricultural bias in the interview instrument. This was necessary to obtain valid data about agricultural occupations. The questionnaire was designed to first determine all types of occupations and activities in each business and the types of background helpful for the different occupations. This part of the data would be just as appropriate to a study of business background or science background as it would for agrarian background.

Next, the employer was asked whether he had been able to hold to the requirements he had set for the various jobs or whether lack of available workers had forced reduced requirements. This approach showed which requirements were really necessary and provided more precise employer definitions from which data were eventually compiled in three degrees of agricultural relation. As a final confirming question, the employer was asked to refer to an outline of the standard vocational agriculture curriculum and indicate any parts which were necessary for employment.

Another refinement was to standardize an objective interview approach. The use of local vocational agriculture teachers as interviewers has advantages but they are offset by greater disadvantages. Removing the obvious agricultural orientation of the interviewers gave better or more consistent information which was ultimately more useful to agricultural education. The alternative selected was to use vocational counselors as interviewers. They have adequate familiarity with agricultural terminology and activities as well as knowledge of nonagricultural occupations. Furthermore they bring into use careful and impartial recording of data and their experience in a standardized but relaxed interview manner.

Findings

From a population of some 3,000 businesses in four representative areas of the state, a stratified sample of over 700 interviews was conducted. The data identified some 250 agrarian occupations in 85 different types of business. These occupations fell within three categories: highly agrarian, moderate agricultural relation, and agriculturally supportive.

(Continued on page 275)

Curriculum Change: A Continuing Challenge

C. O. LOREEN, Teacher Education
Washington State University


C. O. Loreen

There is an air of urgency throughout the nation in reshaping and expanding vocational-technical programs in agriculture. Indeed this urgency for change permeates the whole structure of education from pre-school through higher education. The Vocational Education Act of 1963 and the Vocational Education Amendments of 1968 give more freedom and greater responsibility to vocational education. The legislation gave agricultural education an opportunity to expand. There was need immediately to re-evaluate present programs and to plan new ones.

Complex Process

To understand more fully the scope of the task in revising programs in vocational agriculture in secondary schools, one needs to be aware of the complexities of curriculum revision. To know the objectives of secondary education is important. A well-planned vocational agricultural program will include specific objectives which contribute to these objectives. One must be especially cognizant that the controlling purpose of vocational education is "to fit persons for gainful employment." He should also be aware of the specific objectives which have been established for vocational and technical education in agriculture.

There are many other forces that influence curriculum development. Legal and regulatory factors at the local, state, and national level need to be considered. State curriculum guides, college entrance requirements, and population changes must be recognized. The philosophies of the faculty, administration, and the community play an important part in developing a curriculum.

Scarborough identifies four important obstacles to change.

> First, there is always the question of the advisability of making the change. Second, difficulty that seems to be associated with major changes is the problem of discarding the old.
> A third difficulty usually associated with any major changes is that it is not an appropriate time.
> Finally, a fourth difficulty in making change is . . . that even the advocates of change frequently mean that the other fellow makes the change. In our case, the people in the other programs should make the adjustments. Supervisors and teacher educators always know what changes teachers should make, but we frequently say nothing about changes that we should make in our own roles.[1]

In spite of these and many other interacting forces there is throughout the nation a continuing and growing interest in improving and expanding vocational-technical programs in agriculture.

Curriculum Revision

Over the past six years major curriculum revisions in a wide range of subjects have been undertaken in the United States. Neagley and Evans write that "there are at least twelve major projects in mathematics, thirteen in the sciences, seven in the social sciences, three in English, six in modern foreign languages, and several studies each in the arts, health education, and physical education."[2]

There is widespread and vibrant interest in curriculum revision. Lay groups, sociologists, and psychologists as well as foundations and government agencies are some of the many sources exercising strong influence for change.

It seems clear that curriculum development and revision in agricultural education must enlist personnel from many sources. In a report of The American Council of Learned Societies, Turner makes these observations:

> The ACLS took its first step into the arena of secondary education ten years ago when it decided to do what it could, as a federation of professional societies concerned with the humanities and the social sciences to turn their attention to the problems of the schools. This decision was based upon the realization that a gulf existed between the results of advanced research in its areas of interest and what was being taught below the college level, and upon a conviction that this gulf would continue to widen unless the learned societies and individual scholars could be induced to take an active, professional interest in the schools.[3]

The Center for Vocational and Technical Education at Ohio State University has demonstrated excellent leadership in the area of curriculum development. In May 1963, the Center sponsored a research coordinating conference on agricultural occupations. In July of that year it sponsored a national seminar on agricultural education entitled "A Design for the Future." In 1964-65 the Center embarked on a program of developing teaching modules and other teaching materials. These are especially useful for schools that are interested in developing training programs for non-farm agricultural occupations. These are only a few of its accomplishments. It is clearly evident that The Center has made and will continue to make valuable contributions to curriculum development and revision in vocational agriculture in the secondary schools.

Specialists in agriculture and education at universities and colleges can contribute also. Summer school courses and workshops, conferences of teachers, administrators, and supervisors, and research and pilot programs all play an important part in bringing about an up-to-date curriculum. The Biological Sciences Curriculum Study program involves such an approach.

> For the first time in the history of American Education we now see a large number of research scientists, from the colleges and universities, taking part in a cooperative effort with high school teachers of science and science supervisors to replace an antiquated body of scientific knowledge and outlook with subject matter and perspective that are truly current. The Physical Science Study Committee and the School Mathematics Study Group, the two curriculum studies begun earlier, moved in this direction. But I believe that only in the Biological Sciences Curriculum Study has this fruitful collaberation been fully realized. The result is as astounding to the research biologist as to the high school teacher.[4]


Teachers of agriculture must be involved in planning and initiating curriculum changes.

Yet the prime movers in bringing about curriculum change are classroom teachers and school administrators.

> The public school educator, with his experience and knowledge, must be given the privilege to bring about needed change in the curriculum. Only he, with some special guidance, can state what the individual school in a community must do to prepare students to take their places in society as able to effect democratic decisions and carry on the functions necessary for the propagation and improvement of our American way of life.[5]

Continuing Process

However, it takes time to develop and revise a curriculum. The School Mathematics Study Group embarked on a revision over a six year range. It has since been expanded to nine years. So it would be well to take the advice of Dean Sizer of Harvard who wrote, "Since curriculum development is a long-range continuing process, many of the key men involved must be those whose careers are largely devoted to it. The task is too difficult to leave completely to the hit-and-run professor or the part-time worker."[6]

It is encouraging that many of the best minds in several academic disciplines, some of our most talented and experienced teachers, and many school systems are anxious to devote time and effort to the complex task of curriculum development. Because it takes time to revise and develop a curriculum, it is also encouraging that many school districts are providing time for teachers to become involved in curriculum development by extended contracts and by providing regular contract days for this purpose.

The purpose of the vocational education stated in national legislation is "to maintain, extend and improve existing programs of vocational education . . . so that all persons in all communities of the State will as soon as possible have ready access to vocational training suited to their needs, interests and ability to benefit therefrom . . .." With presistent effort on the part of all agricultural educators and especially teachers of vocational agriculture, redesigning and expanding of programs will continue as we endeavor to meet these challenges.

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[1]Cayce Scarborough, "Change? Who? Me?," *The Agricultural Education Magazine*, Vol. 39 (November, 1966), p. 99.
[2]Ross L. Neagley and N. Dean Evans, *Handbook for Effective Curriculum Development* (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967), p. 44.
[3]Gordon B. Turner, "The American Council of Learned Societies and Curriculum Revision," *New Curricula*, ed. Robert Heath (New York: Harper & Row, 1964)., p. 137, 158.
[4]Bentley Glass, "Activities of the American Institute of Biological Sciences," *New Curricula*, ed. Robert Heath (New York: Harper & Row, 1964), p. 116.
[5]John R. Verduin, Jr., *Cooperative Curriculum Improvement* (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967), p. 8.
[6]Helen F. Robison, *Precedents and Promise in the Curriculum Field* (New York: Teachers College Press, 1966), p. 17.

An Approach for Conducting Research on Agricultural Occupations

(Continued from page 273)

Perhaps the most valuable finding is the middle group of occupations with moderate agricultural relation. It is in this category that useful "Indicator Businesses" were identified. Such businesses are agricultural in orientation but reflect the varying attitudes, opinions, and practices of employers at the time of interview. The amount and degree of agricultural relation is subject to change in relation to the availability of adequate trained persons. Machinery manufacturers and food warehousing businesses are examples identified as indicator business.

A frame of reference is provided by certain highly agrarian businesses which do not vary. These serve as "Key Businesses." Nurseries and retail farm equipment businesses are examples in this category. In a similar way, throughout all business categories there were identified "Key Occupations" and "Indicator Occupations." Among the former were agricultural sprayer and packing foreman. Among the latter were farm equipment mechanics and billing clerk.

Altogether some twenty business types and nearly forty occupations were identified within these two key categories which provide a basis for developing an "occupational barometer." The findings also suggest that the objective of future studies should be to identify which occupations among a standardized selected list are important to agriculture in the area under study. This would simplify future surveys and make it possible to coordinate data throughout a region.

Another consideration in coordinated research is the finding that the indicator occupations include a specialty agriculture group. This refers to the fact that these occupations require intensive knowledge limited to one of the four common areas of agriculture. These persons need primary knowledge of agricultural products or services with a secondary duty of communication with the public. Or conversely, the public contact may be primary. Our evidence suggests curricula which cross two or more vocational fields. If this is what the barometer reads then we must prepare to weather the storm. Vocational agriculture must be prepared to participate with constructive approaches.

Occupational Education in Agriculture

GENE BEACH, Director
Vocational Agriculture Department
Muskogee, Oklahoma

Gene Beach

Eleven vocational agriculture students are enrolled in a unique occupational education program that provides both classroom instruction and on-the-job experience.

The program, now three years old at Central High School (Muskogee, Oklahoma), is paying off three-fold. The enrollees are gaining practical experience in the business world, they are earning money, and businessmen cooperating in the program are enjoying services from youth who are dedicated to their part-time jobs. The program is a pilot project which we have designated Related Agricultural Occupations.

The Program

The program includes special classroom instruction from 7 a.m. to 8 a.m. daily. After the special Related Agricultural Occupations class, students attend their regular courses then spend the remainder of the day and all day Saturday working in business firms that are related to the agricultural industry.

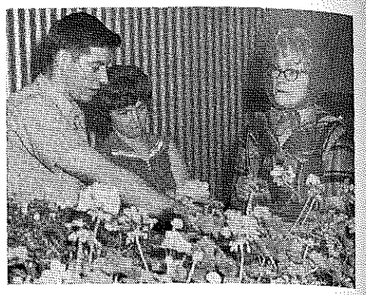
The Related Agricultural Occupations program is designed to involve students in learning sales techniques and good business procedures in jobs related to agriculture. These are basically the same techniques and procedures used successfully in any type of business operation. We are attempting to produce qualified employees who can step into management and ownership positions in the future.

All students presently enrolled in the pilot program are members of the FFA Chapter. The program is open to juniors and seniors who have had one or more years of regular vocational agriculture. Although the Related Agricultural Occupations program has been in operation for only three years, the vocational agriculture department at Central High School has conducted a successful job-related program in vocational agriculture since 1958. The earlier program, like the present one, never failed to stimulate the interest and cooperation of the local business community. Participating employers constantly seek us out for students enrolled in the program.

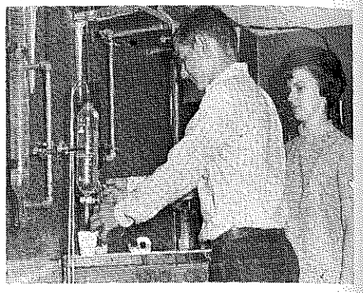
Firms in which students are presently working include a greenhouse, the local country club, a livestock company, a seed company, a nursery, a tractor company, a supermarket, a grain company, a floral retail company, and a flour and feed company.

Teaching and Instructional Materials

The special course for students in the Related Agricultural Occupations program is taught by the regular staff of the vocational agriculture department. A typical class session may simply cover ideal ways to wait on a customer or it may move into the more complex field of business management or the psychology of human behavior. The students study in the classroom and take what they learn to their jobs. In turn, they encounter on-the-job problems and come back into the classroom and discuss the problems and seek solutions as a group. Individual students are assigned specific job-related presentations for discussion in the classroom. The result is a teacher-student-employer relationship which is satisfying to all participants.



Waiting on customers requires tact and knowledge of the product.



Laboratory techniques are skills taught prospective grain company employees.

Some class sessions are taught by representatives of the industries involved in the program. We constantly invite businessmen into the classroom to discuss their own organizations, problems, solutions, and accomplishments. Both students and visiting resource persons enjoy this arrangement.

One of the earlier problems in the program was a difficulty of obtaining literature which could be used as practical teaching aids. Over a period of time we have built a fairly complete library of practical business guides which are used in the classroom. Instructional materials collected are magazines, books, brochures, newspapers, trade journals, manuals, catalogs, charts, business forms, and from personal interviews with owners of agriculturally related firms. The library has not only been collected through the work of school personnel but also by the efforts of students, participating businessmen, and representatives of industry. The library also includes displays which are used as teaching aids and as educational exhibits designed to keep the general public informed about the Related Agricultural Occupations program.

Instruction in Heavy Equipment Operation

J. ARTHUR PETERS
Bradford, Vermont

J. Arthur Peters

At the time this article was written, J. Arthur Peters was Teacher of Agriculture, Bradford Academy, Bradford, Vermont. Mr. Peters was named Principal of Bradford Academy in 1968.

Instruction in heavy equipment operation was added to the course in Forestry, Conservation and Outdoor Recreation at Bradford (Vermont) Academy in 1967. Since nearly a year of advance planning was necessary, I hope that my experience can be of some value to other teachers interested in this area of instruction.

The problems involved in initiating instruction in heavy equipment operation seemed to fall into the following four areas:

—High cost of the equipment, both the original cost and operating costs.

—Relatively short length (ninety minutes) of class periods for instruction.

—Operating skills involved; I had had no previous experience in heavy equipment operation.

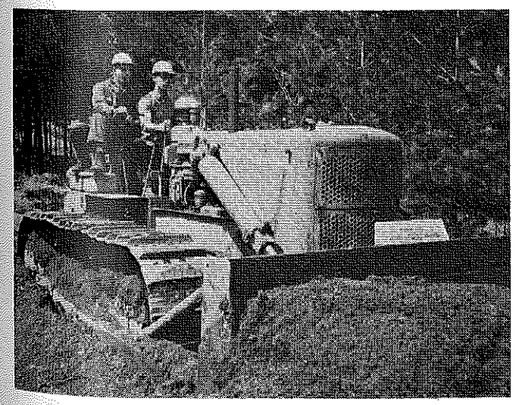
—Student safety including accident and liability insurance.

In spite of the problems involved, there were several factors favoring the establishment of the new program. We had a 120-acre school forest that could serve as a working area. The school board, superintendent, and principal were very cooperative. And there was a high degree of student interest.

Equipment

The hardest problem to solve was the cost of equipment. Requests for cooperation sent to major equipment manufacturers invariably came back with the name of their nearest dealer. Local dealers usually indicated that they could only provide used equipment without an operator for the regular rental rate. The State Highway Department indicated that they might be able to rent equipment through their local district on the same basis as equipment was made available to towns. A local contractor was willing to provide equipment with an operator during a slack period for a total cost that was less than the cost of renting from local dealers or the State Highway Department.

The local Soil Conservation District offered to provide a bulldozer with operator for $2.00 per hour plus a moving charge and fuel cost for use during the slack fall or spring work periods. Both the local contractor and Soil Conservation District indicated they would require at least a six-hour working day. School administrators agreed that all students in the instructional program could be on-the-job for the entire school day for a maximum period of one week. A substitute teacher was employed to teach my other classes so that the entire school day could be devoted to this special project.



A heavy equipment operator supervises a student learning to operate a bulldozer in the Bradford Academy School Forest.

Instruction

Using regular operators as instructors and working with them as both a coordinator and an educational supervisor, I solved the problem of my lack of experience in heavy equipment operation. Students were provided with hard hats and required to have special accident insurance. It was felt that this plus the liability insurance normally carried by the school district would cover accident and liability problems in a reasonable manner.

The program was developed and operated for one week in the school forest area on a budget of $350.00 for a class of six senior students. Each student received 30 hours of bulldozer operation instruction, 30 hours of power shovel operating instruction, and 18 hours of dump truck operating instruction.

Outcomes

As a result of the instructional program, the following improvements were completed in the school forest area: a new ¼-mile entrance road was roughed out, graded, and graveled; a culvert was installed under new road; large stumps were removed from ½ acre; a one-half mile new logging road was constructed; and two typical camp sites were cleared, graded, and graveled.

EXPANDING THE CURRICULUM TO MEET CHANGING NEEDS

EDWARD E. EVAUL, JR.
Northern Burlington County Regional High School
Columbus, New Jersey

Edward E. Evaul, Jr.

Edward E. Evaul, Jr. is Chairman, Agriculture Department, Northern Burlington County Regional High School, Columbus, New Jersey.

The area comprising the Northern Burlington County Regional School District is approximately 100 square miles. Farming is still of prime importance since there are no large industries or cities in the school district. A program in agricultural production includes the competencies needed for employment in the district at the present time. However, farmland is being diverted for home construction and recreational purposes. To meet the changing needs of the district, an instructional program in horticulture was started in 1966-67.

Generally the major objective of the horticulture program is to develop competencies needed for employment in horticultural jobs and to prepare students to continue their education. Leadership development through the FFA is also a major objective of the program.

Facilities

Funds provided by the Vocational Education Act of 1963 were used to construct a 120 feet by 25 feet greenhouse. A headhouse, 25 feet by 30 feet, is included in the greenhouse. It is used as a classroom, storage area, work area, and salesroom. Some plant benches in the greenhouse are available for students for individual experiments, but a major portion of the benches are used for growing commercial crops. The heating system is separated from the headhouse as a safety factor. The heating system is used as an instructional aid when the care and operation of greenhouse heating systems are discussed.

Another often overlooked instructional resource is the school grounds. Since the greenhouse was not available for teaching in 1966-67, the horticulture students landscaped the school grounds. The landscaping is not completed so other classes will be able to continue the project. In addition, the trees and shrubs already planted will continually provide practical learning situations for students.

Program of Instruction

Students meet seven periods a week, three single periods and two double periods. Single periods are used for films, notebook assignments, lectures, and discussions while double periods are used for practical work.

The first year is devoted to general horticulture. Insects, plant diseases, plant propagation, soils, plant growth, and an introduction to greenhouse structures are the primary units discussed. FFA and parliamentary procedure units supplement the first year program.

The second year is also devoted to general horticulture but a greater emphasis is placed on horticultural mechanics. The building of fences, patios, walks and trellises is discussed in class and then constructed during laboratory time. Greenhouse construction is discussed also including structural materials, ventilation, heating, cooling, and lighting of crops grown in the greenhouse.

After two years of general instruction in horticulture, students are encouraged to pursue a course in floriculture, ornamental horticulture, or both. The floriculture course provides instruction and experience in management of greenhouses, plant culture, insects, insecticides, fungicides, soil mixes and rooting hormones. In addition, units on cut flower production, bedding plants, wholesale commercial operations, retail flowershops, and floral designing are given.

The ornamental horticulture course includes instructional units such as nursery practices and business management, plant identification, insects, insecticides, fungicides, pruning, root pruning, tree repair, tree bracing, propagation, and rooting hormones. Grafting, transplanting, landscape design, lawns, wholesale nursery operations, and retail garden centers are also studied. Shop projects based on landscaping and lawn establishment and maintenance are incorporated into the practical work sessions.

Evaluation

The horticulture and floriculture program is in its third year of operation. The second year the classroom and greenhouses were available. The new facilities have increased student morale and enthusiasm. The equipping of the greenhouse delayed some of the cropping plans, but chrysanthemums were ready for Christmas, daffodils for Valentine's Day, cut snapdragons for early spring, tomato and bedding plants for spring, and geraniums for Memorial Day. Most of the plants were sold to students and teachers. In addition, a sidewalk to the entrance of the greenhouse was constructed by the students.

Landscaping of the school grounds has continued. This project has the avid support of the P.T.A. which contributes funds each year. The effects of the first landscaping project are now beginning to show.

The public can see what is being done since many classes are held outside the classroom in the school community. This in itself sells the program. Occasionally having an outside class and improving the school's appearance while learning were unique concepts to many students. But even more unique is the fact that the course has a purpose and learning becomes fun!

A Teacher Illustrates How

Studies of Local Areas are Essential for Program Planning in Vocational Agriculture

MAYNARD J. IVERSON, Vocational Agriculture Teacher
Minot, North Dakota

Maynard J. Iverson

What employment opportunities exist in the present and future in non-production agricultural occupations in business and industry? How willing are agribusiness employers to cooperate in work experience training programs? Toward which agricultural occupations should the vocational agriculture job placement program be aimed?

To answer these and other questions pertinent to program planning in vocational agriculture, I conducted a study of the agribusiness firms in the community. Minot, North Dakota is a city of 35,000 persons located in the rich, small grain and livestock producing northwestern region of the state. Its agribusiness firms serve farmers over a broad area of the state. I interviewed managers of 41 firms located in the metropolitan area which gave direct service primarily to farmers.

Employment Opportunities

The firms employed 685 workers in 58 different job titles. Over 56 per cent of the firms were engaged in retailing and servicing functions. Farm machinery and equipment, dairy products, crops spraying, and grain buying were the major products and services of the agribusiness firms.

Most employees were male; 60 per cent had farm experience. Employers indicated a need for 40 new employees between 1967 and 1970. There was an annual turnover of 103 persons in the 41 firms. Most employees left voluntarily because of part-time or seasonal work. Most employees discharged were for reasons of incompetency. Employers generally preferred and required high school graduation for beginning workers. Farm background was preferred for all job levels but clerical. Age 18 was generally the minimum for job entry.

Most new employees received informal on-the-job training. Twenty-three firms indicated willingness to employ students part-time under a cooperative work experience training program.

Implications for Program Planning

The following implications of the community study appear to have relevance for program planning in local schools.

—Most opportunities in agribusiness are in the firms engaged in retailing, servicing, wholesaling, and purchasing.

—Farm machinery and equipment is a major product and service area in the agribusiness community. Emphasis should be placed in this area of the vocational agriculture curriculum.

—In view of the farm experience of present employees and the farm background preferred of new employees, it is likely a demand for farm-oriented workers will continue to exist.

—A farm experience background for employees is preferred by employers where the worker deals directly with the farmer. Women may have limited opportunities in non-production agricultural firms except as clerical employees.

—Opportunities exist for interdepartmental cooperation between distributive education, office practice, and vocational agriculture in developing agribusiness training programs.

—Firms utilize means other than state or local agencies in seeking new employees. Students should be informed of these media.

—Starting salaries are probably low because of lack of training. Properly designed and implemented training programs could possibly raise beginning wages.

—Since a substantial proportion of agribusiness firms indicate a willingness to cooperate with the schools in a training program, a lack of training centers should not inhibit the development of new programs.

—Semi-skilled and unskilled workers comprise the largest segment of total workers, the largest group of part-time and seasonal workers, and the largest number of persons discharged or voluntarily leaving their jobs. A sound training program could give workers at these job levels greater job permanency and enhance progression to higher job levels.

—Additional employment potential and the turnover of employees indicate a major need for job training and retraining.

—Since the chief reasons for leaving voluntarily are dissatisfaction with the temporary nature of the work and desire to change jobs, it appears that employees have a desire to improve their lot and may be receptive to training.

—Employers preferred informal on-the-job training of new employees in areas other than highly technical subjects. An opportunity exists for the school to provide training as a service to the business community.

Roy F. Eck

Competencies Needed for Employment in Farm Machinery Dealerships

ROY F. ECK, Teacher of Agriculture
Effingham, Kansas

There is a need for instruction in farm power and machinery. Vocational agriculture, particularly in vocational-technical schools and junior colleges, has a responsibility to provide farm machinery dealers with trained workers. The trend to larger farms coupled with the demand for bigger and more complicated machinery has brought about an increased volume of business for farm machinery dealers. The demand for immediate delivery of new machines and for quick repair and servicing of old machines has increased the need for more skilled workers in the area of farm power and machinery.

On several occasions I have been asked by farm machinery dealers to prepare students for employment in their businesses. Recently I make a study to determine the competencies needed for gainful employment in farm machinery dealerships. Farm machinery dealers in six towns in northeast Kansas were interviewed. Each dealer was asked to rate a list of competencies as to whether each was essential, very important, important, of little importance, or of no importance for employment in a farm machinery dealership. The competencies listed below were considered to be important, very important, or essential for employment.

SERVICING TRACTORS

Test horsepower with PTO dynamometer.
Inspect, clean, adjust, and replace fuel injectors.
Have a knowledge of the proper use of fire extinguishers.
Understand the importance of properly cleaning the engine ventilation system.
Properly time the engine correctly, using the timing light.
Test coil and condensor; trace the primary and secondary circuits for wiring cracks and breaks.
Test, clean, remove, completely recondition, and install generators and alternators.
Check, adjust, and install voltage regulators.
Handle engine fuels, oils, and greases safely.
Test, clean, recharge, and install batteries.
Check exhaust system for leaks; repair or replace.
Adjust clutch and replace clutch lining.

TRACTOR OVERHAUL

Grind and seat valves properly.
Fit piston wrist pins with connecting rods properly.
Prepare pistons and fit new rings for installation.
Prepare engine block and install pistons.
Fit connecting rods and main bearings for proper running tolerance.
Use reference manuals for obtaining exact and specific information for engine overhaul.
Proper use of torque wrench to assemble an engine.
Align engine components to insure correct engine timing.
Understand and use cylinder head tightening sequence.
Check crankshaft for flat spots and end play.
Use measuring devices for engine overhaul.
Remove and replace worn oil pump parts to specifications.
Check camshaft for lobe wear.
Measure accurately cylinders and crankshafts.
Install gaskets properly.
Remove, clean, and replace hydraulic valve lifters.
Replace camshaft bearings.
Check valve spring tension.
Remove twisted off bolts with easy-outs and recondition threads.
Make tests to determine if overhaul is needed.
Identify the characteristics of a motor overhaul rather than a need for a tune-up.
Disassemble engine properly without damaging component parts.
Mark, tag, and identify parts for correct assembly.
Remove and replace water pump bearings.

HYDRAULIC SYSTEM

Operate system analyzer.
Service system filters.
Repair control valves.
Recognize the need for service or repair through proper trouble shooting procedure.
Repair hydraulic pumps.
Select hydraulic oils.
Repair hydraulic cylinders.
Repair hose fittings.

TRANSMISSION AND DIFFERENTIAL

Measure gears for wear and adjust to specifications.
Replace worn and damaged gears in transmission and differential
Install oil and grease seals.
Follow paths of power through the transmission.
Service transmission and differential gear cases.
Remove and install antifriction bearings.
Repair universal joints.

MACHINERY REPAIR

Weld efficiently in all positions with electric arc welder.
Read and follow directions in operators manual.
Weld and cut steel with gas welding equipment.
Determine maximum or minimum wear for replacement.
Operate hydraulic press with efficiency and safety.
Operate gear pullers and other shop tools for use designed with safety.
Disassemble a machine and reassemble it efficiently in limited time.
Loosen frozen, rusted, or corroded parts without damage.

BOOK REVIEWS

GERALD R. FULLER, Special Editor
University of Vermont

INDUSTRY AND VOCATIONAL-TECHNICAL EDUCATION by Samuel M. Burt. New York, N.Y.: McGraw-Hill Book Company, 1967. 520 pp. $12.50.

The opportunity for industry-education cooperation in the development of occupational education programs in local community schools is the theme of this book. The author consolidates into one reference much of the thinking of federal, state, and local educators, as well as industry, agricultural, professional, business, and union leaders relative to the need for industry-education cooperation in vocational education. Through the use of case studies, ideas for programs and ways and means of implementing them are brought to the reader.

This book has fifteen chapters divided into three parts: An Overview and Rationale for Industry-Education Cooperation, How Industry-Education Cooperation Takes Place, and Legislation and Organization. Specific chapters deal with initiating programs, conducting surveys, developing curricula, and evaluation. Very basic to the industry-education cooperation concept are the chapters dealing with general advisory committees and local occupational cooperating committees. Emphasis is placed on the need for an occupational cooperating committee that consists of representatives of school and industry people connected with a particular industry, business, agriculture, or professional field. The practical suggestions by the author and the operational procedures discussed in case studies provide ample resource materials for initiating programs and using advisory committees.

The author has had extensive managerial experience. He has served as consultant to the U.S. Office of Education and the U.S. Department of Labor on industry-education cooperation. At present, he is Special Assistant to the Director of the United States Employment Service.

Industry and Vocational-Technical Education should be quite valuable for administrators and directors of vocational programs and for supervisors and teacher educators. It is oriented to trade and industrial education with limited reference to the other vocational services. The basic concepts, guidelines, operational procedures, and implications for agricultural education programs involving off-farm agricultural occupations, however, are quite clear.

Norman K. Hoover
The Pennsylvania State University

★ ★ ★ ★

CONCRETE TECHNOLOGY — INSTRUCTORS GUIDE. Chicago, Illinois: Portland Cement Association. 1965, 264 pp. Single copy free.

The content of this publication is as broad as the title implies. The fundamental principles of concrete are presented in laymen's language. Yet it has been designed to appeal to the craftsman as well as the beginner. The information presented will be valuable for students in all phases of vocational education, apprenticeship training, post-high school technical courses, and in industrial training programs.

Prepared by the Portland Cement Association in cooperation with the National Ready Mixed Concrete Association, it is designed to help the teacher in planning and presenting a course in the fundamentals of concrete. The guide should be a time-saver for the teacher in preparing a course of study and lesson plans.

Content is divided into twenty-one units, each covering a particular phase of concrete technology. Each unit contains two parts. Part I is the Instructors Guide which contains a clearly stated objective, introductory information, presentation outline, application suggestions, and test questions or discussion points. Part II of each unit is the text material from which the Instructor's Guide has been developed. It covers the teaching outline in detail and virtually eliminates the need for additional references. An accompanying student manual is available from Delmar Publishers, Inc., Mountainview Avenue, Albany 5, New York.

Teachers requesting a copy of this publication should do so through their Portland Cement Association District Office.

Guy E. Timmons
Michigan State University

★ ★ ★ ★

EDUCATORS GUIDE TO FREE FILMSTRIPS by Mary F. Horkheimer and John W. Diffor. Randolph, Wisconsin: Educators Progress Service, 1968, Twentieth Edition, 139 pp. $7.00

The twentieth annual edition of *Educators Guide to Free Filmstrips* is a comprehensive professional information service devoted entirely to free filmstrips and slides currently available from industrial, governmental, and philanthropic organizations. The items are classified alphabetically in each of twenty-two curricular areas as well as by title index, by subject index, and by source and availability index.

The section on agriculture contains eight sound and eleven silent filmstrips and one set of slides dealing with a variety of subjects including plant reproduction, water, systems farming, swine, dairy, beef, insects and diseases, corn, grain exchanges, and tractors. Several of the filmstrips listed under other special areas contain information directly related to subject matter taught in agriculture. These topics include shop safety, electrification, gasoline and diesel engines, conservation, soils and food production.

Also indicated in each description is the educational level (elementary to adult) for which the filmstrip or slide was prepared. This handy reference should be a valuable addition to a school library to enable teachers to locate quickly the latest available filmstrip or slide materials in their particular field of interest.

David F. Shontz
University of Rhode Island

News of NVATA

WILLIAM G. SMITH
President, NVATA

As a result of a resolution passed at our Convention in Dallas, the NVATA has organized a committee to study and make recommendations concerning professional leadership in agricultural education needed in the U.S. Office of Education. The committee, which met on January 22 and February 12-13, has received excellent cooperation from the National Association of Supervisors of Agricultural Education, the American Association of Teacher Educators in Agriculture, the American Vocational Association, and agricultural organizations including the Grange, Farm Bureau, and Farmers Union.

A preliminary report of a subcommittee of NVATA's U.S. Office of Education Study Committee is presented below. Members of the subcommittee are James Durkee, NVATA, Chairman; A. H. Krebs, AATEA; T. L. Faulkner, NASAE; Lowell Burkett and Alton Ice, AVA, consultants; James Wall, NVATA, Coordinator; and William G. Smith, NVATA, ex-officio member. Comments and reactions pertaining to the report should be referred to James Durkee or James Wall for consideration by the Committee. The report follows.

REPORT OF THE COMMITTEE

Agriculture is a vital industry in America. For all citizens of the United States agriculture is basic to our welfare, our economy, and our national defense. Quality education in agriculture is essential for farmers and ranchers if they are to survive in a competitive society and maintain production standards that will assure food, fiber, and clothing for a growing America. The youth planning to enter the agricultural industry, as well as those men and women employed in the agricultural industry, need the services of vocational education in agriculture if they are to keep abreast of the rapid changes in the industry brought about by scientific, technological, and automative advances.

The committee while facing the direct concerns of vocational agriculture also gave consideration to the shortage in quality leadership for all vocational education services in the U.S. Office of Education. The committee also considered some of the reasons for the lack of support for and service to vocational education as well as the leadership needed to give direction to national, regional, and state programs of vocational education. The committee recognized the following as key problems in having the leadership that is desired by the profession and needed by the students in programs of vocational education.

—Lack of administrative level leadership in vocational education.

—The understaffing both in numbers and grade-level positions for the administration of funds. (An increase from approximately $50 million in 1962 to an authorized appropriation of a possible $800 million for 1970; $279 million has been budgeted for 1970). This increased funding with less staff in 1969 than was available in 1962 eliminates the service, leadership, and coordination activities that are essential to programs of vocational education.

—The fragmentation of vocational education among Federal agencies and cabinets in Government. Ten cabinets and more than fifteen different agencies are involved in vocational education.

—The lack of clearcut aims and purposes among the various divisions and bureaus responsible for vocational education within the U.S. Office of Education and the lack of agricultural education representation in regional offices.

—The continuous reorganization within the Office of Education directed by individuals not acquainted with responsibilities and services needed in vocational education.

—The lack of vocational education personnel in decision-making bodies within the Office of Education.

—The failure to provide full funding for vocational education as called for in the Vocational Education Acts as well as funds for the staffing and operation of the Office of Education.

Recommendations

• The committee recommends the following staffing for agricultural education in the Office of Education. This staffing plan would presently provide the minimum leadership and service necessary to maintain and support vocational education in agriculture at the national and regional levels.

—Heading the national program would be a Chief or Director of Agricultural Education and assistants.

—One assistant would devote full time to youth organizations as National Executive Secretary of FFA.

—There would be personnel with education and experience in agricultural education on the regional staffs. There would be one specialist in agricultural education on the staff for each of the regions. These individuals would be responsible to the Chief of Agricultural Education.

—Adequate funds must be available for secretarial assistance, travel, and operation of the staff.

• Service and leadership responsibilities that are essential for the growth and development of agricultural education that should be provided by the national and regional staff in agricultural education are:

—Collect and disseminate information concerning programs (research and evaluation), personnel (preparation and recruitment of teachers; selection, training, and placement of students), and implementation of legislation (policies and procedures).

—Liaison with agricultural industry, professional organizations, state and national advisory councils, and agricultural organizations.

—Consultant and coordinating activities among the regions, states, and within the divisions of the Office of Education in areas of special needs; secondary, post-secondary and adult education; work experience; research; teacher education; student or youth activities; and curriculum, instructional materials, facilities and equipment.

Program of Action

—Inform the membership so they are united and in agreement that the staff and services recommended are adequate to provide minimum services for agricultural education at the present time.

—Contact and discuss the problems and concerns of vocational education and agricultural education with the Secretary of Health, Education and Welfare. (The AVA staff has volunteered to assist with this activity.)

—Request the membership to be prepared to act when direction is given by the NVATA Executive Committee.

—Utilize the services of agricultural organizations (teachers) to tell facts about agricultural education and support action that will implement this report.

—Encourage the membership to request copies of H. R. 6171, Legislation to Establish a Department of Education and Manpower Training, and to urge support of the intent of the legislation through their elected representatives.

—Convey to the members of the National Advisory Council the importance of agricultural education to our society.

—Request permission to present our findings to the Advisory Committee of the Agricultural Education Division of AVA.

—Encourage agricultural news media to tell the story of vocational education in agriculture.

H. M. Hamlin
1894-1968

H. M. Hamlin, a national and international leader in education and agricultural education, died suddenly on December 14, 1968 at his home in Raleigh, North Carolina. Dr. Hamlin was born in Brookings, South Dakota. His boyhood years were spent in Minnesota. He attended Carleton College in 1912-13 and received the B.S. degree in 1916 and the M.S. degree in 1922 from Iowa State University. He earned the Ph.D. from the University of Chicago in 1931.

Dr. Hamlin was a high school teacher of agriculture in Minnesota. He began his career as a teacher educator in agricultural education at Iowa State University in 1920. From 1938 to 1961 he served as Chairman of the Agricultural Education Division, College of Education, University of Illinois. During 1961-62 he served as Chairman of the newly formed Department of Vocational and Technical Education at the University of Illinois. Since retiring from the University of Illinois in September 1962, Dr. Hamlin and his wife lived in Raleigh, North Carolina where he was professor and consultant at the Center for Occupational Education at North Carolina State University.

Following retirement from the University of Illinois, Dr. Hamlin served also as a Research Consultant for the Research and Development Program in Vocational-Technical Education at the University of California, Berkeley, and as Consultant at the Center for Vocational and Technical Education, The Ohio State University. Just prior to his death he completed a comprehensive study of occupational education in North Carolina for the Governor's School Study Commission.

Dr. Hamlin was the first editor of *The Agricultural Education Magazine*. He was a prolific writer. His writings had profound impact through the years on agricultural education. Dr. Hamlin authored or shared in the writing of some 40 books and monographs and over 150 articles. Among his more well known books are *Agricultural Education in Community Schools, The Public and Its Education, Public School Education in Agriculture,* and *Citizens Committees in the Public Schools*. His last article written for *The Agricultural Education* Magazine appeared in the January 1969 issue.

In 1962, Dr. Hamlin received the first Distinguished Service Award of the American Association of Teacher Educators in Agriculture. Throughout his career he was a leader in the promotion of the interest of the public in education and in the promotion and use of citizens' advisory committees. He had a continuing and vital interest in adult education.

Dr. Hamlin is survived by his wife Louise, 2133 Ridge Road, Raleigh, North Carolina, a son of Texas, and a daughter of California.

J. K. Coggin

Professor J. K. Coggin, retired from North Carolina State University, died unexpectedly at his home in Cary, North Carolina, on February 21, 1969. He had been in teacher education for many years and had previously served as a supervisor in North Carolina. He also served as secretary and as president of the Southern Regional Conference in Agricultural Education.

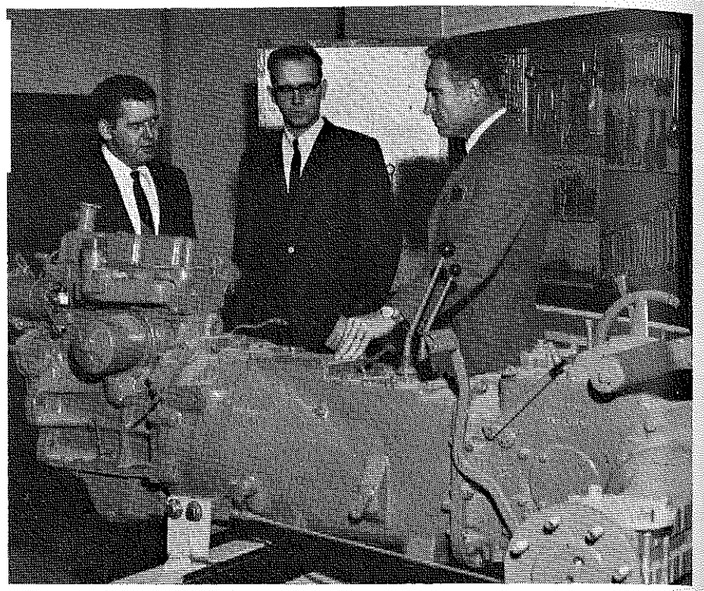
In addition to being known as an outstanding teacher, he became a recognized specialist in photography. His photographs probably have been used more widely in books and magazines than any other person in agricultural education. "Photo by J. K. Coggin" became a familiar credit line. He started the "Stories in Pictures" section of *The Agricultural Education Magazine* and was Picture Editor for many years.

He was also a specialist in agricultural mechanics, particularly in facilities and equipment and their proper use. He was much concerned with shop safety and became an expert in color conditioning and lighting for safer work in shops. His insistence upon high quality work in a shop became one of his trademarks.

Professor Coggin is survived by his wife and a daughter.

Stories in Pictures

ROBERT W. WALKER
University of Illinois



Troy Freeburg (center), a junior in agricultural education at the University of Wyoming, and Jim Durkee (left), Teacher of Vocational Agriculture, accept a tractor engine for the Department of Vocational Education and University High School, University of Wyoming, from Lon Covelli, Ford Motor Tractor Division. (University of Wyoming photo — Pownall)

Tom Johnson (center), Central Region National FFA Vice President, and Dan Lehmann (right), President of the Illinois Association FFA, talk with Lloyd Ummel, Farm Director for WCIA-TV, Champaign, Illinois, about vocational agriculture and the FFA. (Photo by Ronald Scherer, University of Illinois)

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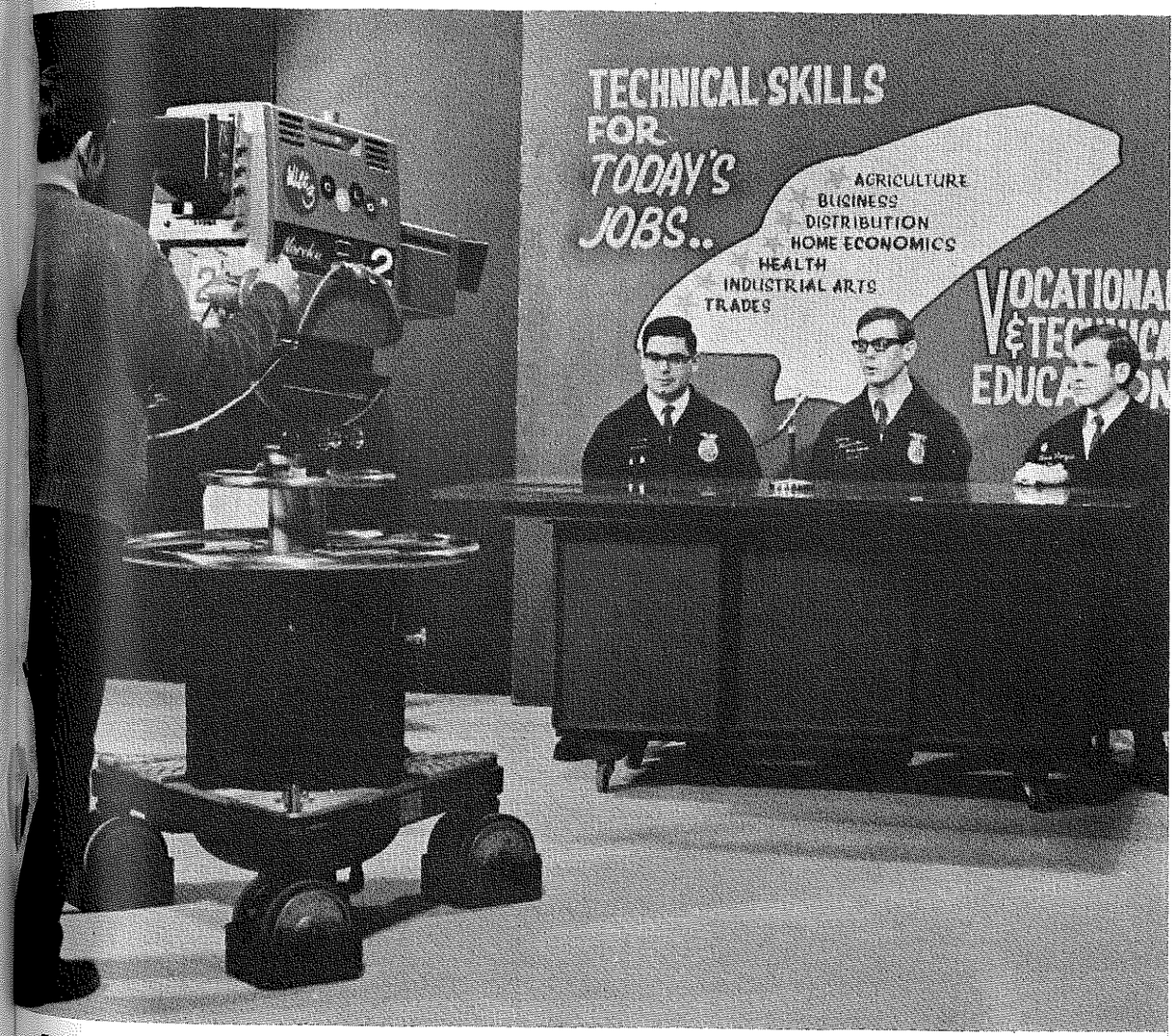

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