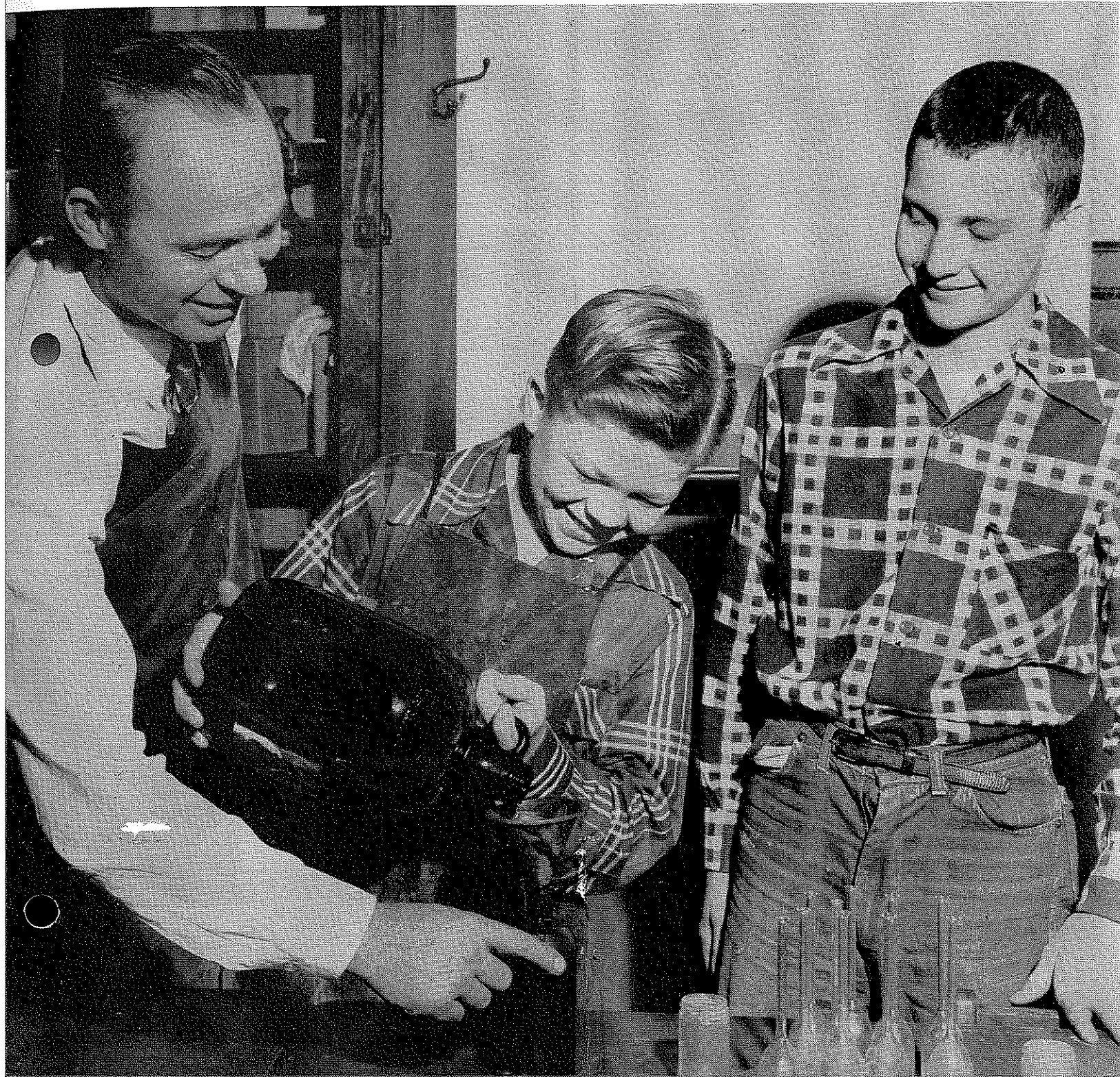


AGricultural EDucation

Today's Teaching Methods—

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UNIVERSITY OF ARIZONA
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JANUARY 1964



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The Cover

Today's teaching methods call for increasing involvement of students in activities requiring thinking and decision making. Here, G. V. Aker, teacher of vocational agriculture at Brookville, Ohio, assists two of his students in one of the steps in keeping dairy herd records.

Guest Editorial

Teaching Principles, Concepts, and the Like

CARSLE HAMMONDS, Teacher Education,
The University of Kentucky

In vocational agriculture much attention is being given to teaching principles, concepts, values, and other generalizations, and more attention will be given in the future. This is necessary if what is learned is to be used *generally*. The learning process involved is the process of generalization. Teachers should have a practical understanding of the process and the part that it plays in learning.

There is a world of difference between securing generalization by the student and his learning statements that are generalizations. Being able to repeat a word or a statement read or heard is no indication that one has generalized. One has generalized on an element or feature, or combination of elements or features, only when he can recognize or use it appropriately in any ordinary situation containing it.

A generalization is a mental abstraction. The common element in a number of experiences is recognized and abstracted from the other features or qualities there may be in the situations. (The term "abstract" comes from two Latin words meaning separated, apart from, to draw away.) Generalization may be defined as the discovery of the same characteristic(s) which at first was not seen. It is the discovery of what makes a thing what it is; for example, what makes a square a square. It occurs from reacting to the feature and becoming aware that it is common to a number of concrete situations. Thus one *discovers* the commonness of the feature which at first was not seen; he comes to see the general in the particular cases.

Discrimination is related to generalization in an important way. Learning depends very much on capacity to discriminate. Other things being equal, we should expect generalization to be promoted in teaching to the extent that the common element(s) to be extracted is identifiable and distinguishable from others in the situations. In teaching what a grass is, for example, the common elements in grasses—leaf attachment, leaf shape, stem with nodes and hollow or filled with pith, etc.—must be identifiable and distinguishable from other elements in the situation. No discrimination by the learner, no correct or adequate concept of grass.

A chief cause of failure to learn is lack of concrete experience from which students may generalize. They may not have had the experiences before entering the course, and the course does not provide them. Failure of students to grasp new concepts, principles, and

(Continued on next page)

From the Editor's Desk

Today's Teaching Methods

Any teacher can be expected to be judged mainly by how well he teaches. His years of experience, his relations with the public, his dress, his personality, his knowledge of subject matter, or his credit hours of graduate work count for little if his students do not acquire new learnings, many of which become important enough to them to change their day to day behavior.

Teachers of vocational agriculture, well aware of the need for effective teaching in this field, face new problems as they enter their classrooms in 1964. In the field of agriculture, there is twice as much technical information as even 10 years ago and more new knowledge becomes available every day. Those who would earn a living in agriculture must possess more of this knowledge than ever before and know better how to put it to use.

Today's students are a more sophisticated and cosmopolitan group than ever before. They come from differing home backgrounds. They have wider curricular choices in most high schools. They face greater difficulties in starting in farming and getting jobs.

In the face of this situation, the temptation is to become overly "Agriculture Centered." Over concern for the subject matter of agriculture expresses itself in the classroom through attempting to cram the student's mind with all of the principles, information, facts, and knowledge which the teacher feels is necessary for a lifetime in this field. Teacher domination rather than teacher-student planning takes place. Departmentalized subject matter takes precedence over the integration of subject matter. The ironclad and inflexible curriculum becomes the rule rather than the exception. The end of teaching becomes that of students having a smattering of unrelated information which is promptly forgotten rather than the ability to use selected facts to solve contemporary problems.

Effective teaching in 1964 calls for being more selective in what we teach. The selection of subject matter must be guided by the needs, interests, and aspirations of the particular group of students in each individual classroom. The teacher must be a master of the technical aspects of this particular area of agriculture. Generally, that subject matter should be selected which will be of value to a majority of students in meeting their problems in agriculture this week, this month, and this year.

Having decided upon what to teach this teacher needs to develop in each student, above all else, the ability to think clearly using the best information available and to reach decisions which will be tested with personal experience. Such teaching produces

(Continued on next page)

Today's . . .

learning which is retained and used. It serves as a background for solving future problems. Such teaching also calls for skillful motivation, for greater understanding of individual differences and for higher standards of student achievement.

In brief, teaching in 1964 which is

based upon important and relevant subject matter in agriculture and which requires rigorous thinking and includes useful experience will result in the kind of learning demanded of today's students in vocational agriculture. □

Ray J. Woodin

Concepts . . .

other generalizations as they are dealt with in class takes its inevitable toll in subsequent learning. (People learn with their learnings.) It is quite likely that the quality and level of generalization depend more upon education and experience than upon intelligence. □

Improving Teaching Practice

PAUL HEMP, Teacher Education, University of Illinois



Education depends upon what students do, not on the labels of the courses they take. What a student learns depends on the organization of learning experiences available to him. We can begin to raise the efficiency of education when we put the student in the center of our teaching plans. The alternative procedure, commonly practiced in many schools, is to place subject matter in the center of planning. Under this system the teacher's effort consists of getting students to assimilate and digest certain subject matter and to regurgitate it to the teacher on final exam day.

"Student-centered" education deals with the real needs and problems of students. It begins with the students' interests but it carries students to interests of a higher level and interests with new dimensions. Planning for student-centered education involves deciding how students should spend their time at school and what learning experiences should be provided for them. Teachers of agriculture are noted for their ability to plan and conduct student-centered programs, but we still know very little about the teaching-learning process underlying our plans.

What Knowledge Should Be Taught?

The ever-increasing body of agricultural knowledge and the rapidity of change within this body of knowledge keeps even the best informed teachers hopping to keep up to date. Keeping abreast of current subject matter is of primary importance to teachers, but the accumulation and the changing character of knowledge

has some important implications for teaching practice.

Facts and figures in some areas change faster than an author can write and revise books. Also, we know that isolated knowledge learned apart from the solution of real farm problems is retained for only a short time. Fewer facts and more scientific principles and economic principles need to be taught in vocational agriculture. Principles which can be applied in a variety of situations will be of more value to students than facts which become outdated quickly.

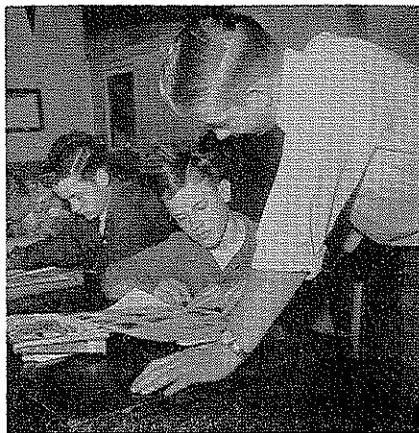
Students must be taught how to grow corn but they must also understand how corn grows. The differences between these two learning goals can be illustrated by identifying some sample questions under each area.

- I. *How to grow corn.*
 - A. When should I plant corn?
 - B. How thick should I plant?
 - C. What fertilizers should I use?
 - D. How should I prepare the seedbed?
- II. *How corn grows.*
 - A. Does corn breathe?
 - B. Why does the plant have brace roots?
 - C. What nutrients are used to produce foliage? Seed?
 - D. Do all kernels from an ear have the same genetic make-up?

The job of the teacher is to teach how corn grows as a part of the solving of real problems of students. Instruction becomes academic to most



An Illinois teacher provides on-farm instruction in land selection.



The teacher helps a student locate information during a supervised study period.

students if it is not tied to their major concerns and interests.

Discovery Method and Programed Learning

The "discovery method" is being used in science and mathematics, but successful vocational agriculture teachers pioneered in the use of this procedure. They called it "problem solving teaching." Recently, an honor student talked with me about the special honor sections he was enrolled in at the college level. He claimed the teaching in honor sections was superior to that in ordinary sections because practical problems were used in teaching. Instead of asking students to memorize botanical names and classifications of plants, the instructor asked the class to plan a complete landscaping program for a particular house and lot and to suggest planting procedures. This sound procedure for learning has been used by teachers of agriculture for more than 30 years.

Programed learning has a place in vocational agricultural education as it has a place in most subject areas. Research at Pennsylvania State and Cornell University suggests some possible uses of programed learning in the vocational agriculture area. In Illinois, the Vocational Agriculture Service has sponsored the use of an electric matching device and scrambled booklets in several pilot centers during the past year. Many of the programed learning aids used in the modern classroom are self-teaching aids. These devices help students learn facts, work problems, and proceed through step-by-step learning activities in an independent fashion. Some of the time-consuming class activities such as record keeping and farm planning could be studied by students through programed instruction.

Handling Creative Talent

Recent research in the area of creativity has important implications for teaching methods. Many of our everyday practices in the classroom do not allow creative students to exercise their talents. Torrance of Minnesota contends that "Abilities measured by tests of intelligence and scholastic aptitude emphasize logical reasoning, memory, and convergence." Tests of creative thinking emphasize divergent kinds of thinking. . . .¹ Creativity must be rewarded, not punished in the classroom. Emphasis should be placed on building a respect for unusual questions and unusual ideas. Students should be encouraged to create new designs, formulate new techniques and procedures, and experiment with new ideas.

Course Organization

For many years we have used the "shotgun approach" in high school vocational agriculture instruction. One course or one series of courses was supposed to be good for everybody who planned to work in the field of agriculture. It is true that many non-farm workers need some basic training in production agriculture, but somewhere along the line specialized courses must be provided for the prospective workers in non-farm agriculture. We need to use the "rifle approach" in designing new courses for special groups. These courses should have descriptive titles which mean something to the public. Titles such as "Agriculture I" or "General Agriculture" do not catch the attention of students or parents.

Many vocational agriculture classes meet on a single period basis. Teachers find it difficult to accomplish what needs to be accomplished, especially in the shop and on field trips. One possible solution to this "time-squeeze" is to remove the agricultural mechanics units from Agriculture III and IV and teach two courses labeled "Agricultural Mechanics I" and "Agricultural Mechanics II." This arrangement has been used in New York and possibly other states.

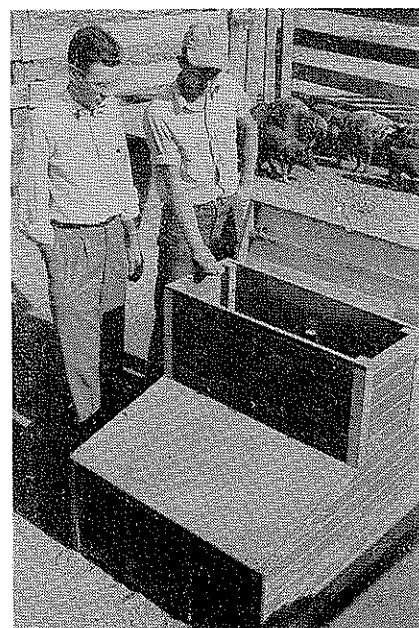
Certainly, as less class time is available for supervised study, teachers will need to assign agriculture students more homework and more out-of-class work.

A third solution to the "time-squeeze" in vocational agriculture is to move the project or practice phase

of farm mechanics instruction to the farm. Students would be taught basic skills in the school shop, but large projects which provide opportunities for student practice would become a part of the agricultural experience program. Many teachers will be reluctant to give up the project method of teaching agricultural mechanics but changing conditions may force a move in this direction. One teacher recently identified the problem when he asked, "Am I justified in allowing my class to spend six weeks building a two-sow farrowing house?"

Supervised Agricultural Experience

Another change which should be made in teaching methods is the extension of supervised agricultural experience to the non-production phases of farming and agriculture. Students who plan to enter non-farm agricultural occupations obviously need special instruction and special experience programs to prepare them for their future work, but students who are headed towards farming also need supervised experience programs which go beyond production agriculture. Supervised farming programs should be broadened to include more learning experiences in farm mechanics and farm business management. FFA activities should be recognized as a vehicle for providing laboratory experience in the area of leadership training and citizenship. Viewed from this angle the FFA program is to leadership education as the swine project is to swine instruction. The teacher's job is to provide instruction in the



Individual instruction by the teacher helps student apply practices studied in the classroom.

¹Ibid.

areas of leadership training, citizenship, and personal development and to use the FFA as one phase of the student's agricultural experience program.

New Motives for Learning

The possibilities in agricultural education seem almost unlimited when we conceive of agricultural education as a vocational program, a general education subject, and a vehicle for teaching special groups of students or special subject areas. An Ohio school uses agriculture and a school farm as a vehicle for teaching slow learners. A veteran's hospital in Illinois uses the growing of plants as a rehabilitative activity for patients. Many corrective institutions have large farms which provide opportunities for inmates to work and learn new skills. Agriculture is an excellent vehicle for the teaching of mathematics, science, and other subjects. This is due, in part, to students becoming involved in a real problem-solving situation and finding out that problems cannot be adequately solved until principles of mathematics or science are applied. Agricultural education is more than vocational education, but its many possibilities have never been thoroughly explored.

Lecture vs. Discussion

It is easy for teachers of agriculture to resort to an overuse of the lecture or presentation method because this method of teaching has been used on them by so many college professors and other teachers. Group discussion, which could take the form of problem-solving, the discovery method, or the conference procedure of teaching, has been found to be significantly superior to lecture or presentation methods when change in behavior is used as an evaluative criterion.

The lecture or informing method of teaching can be used effectively when a new idea or new information is needed by a class and only the teacher has this information and knowledge. Teachers need to resort to presentation only when class members do not have the answer, cannot "discover" the answer, or do not have the time or resources for researching the answer. Presentation of information or ideas is especially useful at the *awareness* and *interest* stages of the learning process. The *trial*, *evaluation*, and *application* stages can be handled best by group discussion and on-farm follow-up by the teacher.

It is probably true that many things now "presented" to high school students could be handled more fruitfully by using the discovery process. For example, should a teacher present the Pearson Square method of balancing a ration to his class and have them master the technique or should the teacher set the stage for the class to "discover" the best method of balancing a ration?

Some teachers say that adult farmers in their communities do not want them to use a discussion or conference method of teaching in adult courses. They say the farmers expect the teacher to tell them what is new in agriculture. In interpreting this observation, one needs to know what kinds of farmers make these suggestions. Rural sociologists have classified farmers into five groups based on how fast they adopt new farm practices. These categories are innovators, early adopters, early majority, late majority, and laggards.² Studies have shown innovators to be farmers who frequently by-pass the agriculture teacher and county agent and go directly to the researcher or to other innovators. Innovators want information, new ideas, and answers to questions, so they expect to obtain a "vertical transmission of knowledge" from the teacher or resource person. After obtaining this knowledge, they automatically apply it to their own farming operations. But in most communities innovators constitute less than three per cent of the farmers. Persons who are not innovators can usually learn a great deal through "lateral transmission of knowledge" which takes place in a lively group discussion. The implications of these facts for teaching adults are as follows:

1. The method of teaching used should vary with the composition of the class.
2. Usually a combination of methods is appropriate. Group discussion, if properly handled, allows for a "feeding" of new information and research data into the discussion by the teacher.
3. The method of teaching must be appropriate for the stage of the learning process. Methods of mass media involving pres-

entation and lecture are often appropriate to accomplish awareness or interest on the part of farmers, but at other stages group discussion should become the predominate method.

We should not conclude that the adoption of approved farm practices is the only or best criterion for measuring teaching success. In many cases a decision by a farmer not to use certain approved practices may be a symptom of important learning. Adult education programs designed only to promote new, approved farm practices have a weak structure from the very beginning.

Summary

Teaching methods can and should be changed, but vocational agriculture methodology has long been recognized as superior in many respects. Problem-solving, experience programs on farms or elsewhere, an individual follow-up of students by teachers, learning by doing, course planning based on local needs, and a close relationship between a student, his parents, and the teacher are some of the strong points of vocational agriculture teaching practice. These elements should not be discarded in favor of new approaches in other fields which have not been properly field-tested. Reliable practices must be separated from educational fads. Methods proven successful over the years should be useful in vocational agriculture courses for nonfarm agricultural workers and for college-bound students. There is no reason for us to assume that new agricultural education programs cannot employ many of the reliable procedures used in vocational agriculture programs for farmers. The modern teacher of agriculture emphasizes a broad vocational education program for his students. His teaching methods and the content taught must help students become more adaptable in a changing world of work and must encourage further growth and development on the part of students. □

Time and time again employers are giving the nod to students who have learned the problem solving approach because they know this individual can adapt to new situations as they arise. Such an employee will take less supervision, can turn out more work and will maintain a high level of work.

Howard P. Addison—*The Agreview*

²Subcommittee for the Study of Diffusion of Farm Practices, *Adopters of New Farm Ideas*, North Central Regional Extension Publication #13, October, 1961.

Is Problem-Solving Instruction Worth Saving?

RICHARD H. WILSON, Teacher Education, The Ohio State University



Teaching in its utter simplicity is one person helping another to learn. Teaching is opportune when there is need to learn. Problems create the need for learning, and good teachers contrive problems as teaching aids. Problem solving instruction originated as early as primitive man's purpose when he called forth his son with an invitation to go hunting in order to evoke a willingness to learn spear throwing.

Learning—A Sequence of Experience

The task of teaching is a matter of developing and following a logical sequence when aiding another to acquire new knowledge and grasp concepts. Our primitive father predicated the knowledge needed, planned the instruction, instigated the motivation to learn, conducted the lessons, provided sources of knowledge, and, finally, helped his son evaluate the success of his learning effort.

Instruction started with familiar ideas and expanded to include some new, unknown concept or skill. The student was always started on home grounds.

The problem solving approach to teaching is a logical sequence of planned instruction which forces the teacher to start the student on familiar ground and then aids in the orderly exploration of new concepts.

Student Experience—The Center of Instruction

Any teacher who comes before a class without concern for student's past experience is more subject-centered than student-centered. Some would say he was also absurd, yet we observe such teaching every day. That teacher is asking students to learn abstractly—a most difficult way. Even the feeble attempt to motivate learning by the threat, "This will be on the quiz," helps students little.

On the other hand, instruction in vocational agriculture should offer ready opportunity to capitalize on student interest. The surrounding world is a wonderland of natural science.

The problem solving approach to instruction found ready acceptance in vocational agriculture when the project and the farming program created a natural environment for its use. The idea was an outgrowth of the early philosophy of Dewey and others who held that education should provide the student with meaningful learning experiences. Its use in vocational agriculture offered a basis for keeping instruction clearly within student perspective. Its value was so highly regarded by some that emphasis upon the problem was paramount in methods courses and woe unto the teacher who started a class without a student problem on the blackboard.

Problem Solving Applies "Method of Science"

The problem-solving approach is primarily a teaching maneuver. It offers two valuable rewards. First when properly achieved, it arouses positive student interest sufficiently to motivate active search for knowledge. Secondly in the process, the student learns a systematic approach to the recognition, analysis, and solution of problems. Its use in teaching provides repeated exercise in the application of the so-called, "method of science." Such experience in creative thought is a highly prized goal of secondary education today.

Problems with Problem Solving

Perhaps too much emphasis has been placed upon a limited problem solving concept. Perhaps teachers were taught one outline or system of problem solving with an emphasis upon the problem solution rather than the generalization of broadly applicable principles. Perhaps teachers lacked the imagination to see problem solving in the abstract and broaden its adoption to their teaching. In any event, the problem-solving approach may be today the most abused, most misunderstood, and the most misused teaching practice attempted in vocational agriculture. The frequent result is greater educational confusion

than if students had been led through a carefully programmed sequence of well-planned studies with the aid of a printed text. The disillusioned teacher falls back on the more academic mode of lesson presentation. Lacking a better approach he seeks refuge in subject-centered instruction where both he and the students can feel a familiar boredom.

Difficult Teaching Situations Ahead

Unfortunately, much teaching in vocational agriculture could easily become wholly subject centered. We are leaving a period which may be characterized as the "Golden Age of Vocational Agriculture," when the farming program reigned supreme. During the years when every student saw his future limited to farming and had respectable farming program responsibilities, the problem-solving approach was a natural. The teacher who couldn't arouse a class of students over the nutritional problems of pregnant gilts, which most owned, was a poor prospect indeed. When the class had worked out a ration for Joe's Hamp gilt, every boy was certain his own animal deserved as much. Some day there will be a bronze monument erected to the vocational agriculture sow and litter project. It will probably have cotton plants and corn stalks around the base.

In any event, teaching was a contrast to that which may be ahead in a time when most students will see little prospect of farming and work experience programs replace the vocational agriculture project. The less apparent ready suitability of the traditional problem approach should be cause for thought among teachers and professional leaders.

Difficulties Can Be Solved

Some of the difficulties which have discouraged use of problem solving by teachers can be eliminated. Frequently mentioned is the time required for teaching. Here we must recognize that the students (and sometimes the teacher) are going through a new thinking process not experi-

enced in most other classes. They are required to discover knowledge needed and then consider sources even before beginning study. As older students gain proficiency in problem solving it seems a waste of time to go through all these steps. Once a case has been made for studying a topic, they will accept direction from the teacher as to the most suitable sources of knowledge. Tell them and get on with the study.

Another complaint is that instruction is tied to the farming programs of students and the teaching program is limited to a few enterprises. Here the primary limiting factor is the teacher's imagination. There is no reason to stay with farming programs. We may bring in the problem of a farmer or contrive one which is all but real. For ages man has been intrigued by puzzles. Witness the success of Monopoly as a business-management game. Let students make believe, then apply current data and factual knowledge. Agricultural economists conduct respectable studies in this fashion; so can our students synthesize problem situations.

We also hear that the teaching of farm management leaves no room for problem solving because few students manage farms. This is not so serious when we realize that older students are the ones more frequently taught this subject and they are ready for more abstract instruction. Even so, when they have experienced problem solving instruction during freshman and sophomore years they find it difficult to concentrate on generalized

principles. Judicious application of pre-fabricated problems often helps much. It deserves more thoughtful application in our teaching.

Instruction in farm mechanics is another area that is said to bring difficulty in the application of problem solving. There is certainly no dearth of problems which lend themselves to group consideration and analysis. The teacher has a magnificent opportunity to manipulate students into situations where they face a problem requiring solution. To a greater extent our difficulties grow from facing students with trite problem statements and attempting lengthy class solutions while they chafe to get on with shop work. A more suitable approach is to recognize ahead a myriad of problems students can be faced with in attempting mechanics tasks. Then capitalize upon these by brief teaching excursions using significant questioning to drive students toward answers.

Perhaps our greatest teaching failure involves the attempted solution of problems not precisely narrowed down to a scope which would enable class solution. "How should we feed market hogs?" is about as crisp a problem as "How should we place a man on the moon?" Each one covers a broad range of more precise problems, all of which demand solution in some proper order.

A Return to Student Experience As a Teaching Aid

If problem solving instruction in vocational agriculture has lost ground, it probably started with the emphasis

upon the development of farming programs "to aid in the establishment of boys in farming." When the solution of farming program problems became the end sought, educators and students were placing the dollar sign ahead of educational objectives. The broadening study of general principles was overlooked in the haste to arrive at a solution for one particular situation and then move on to another problem in a different enterprise. We can recover if we will place problem solving teaching in its proper perspective.

The danger ahead lies in the possibility that as farming programs diminish in grandeur and frequency, the use of the problem as a teaching aid will disappear. It is past time for a return to teaching in which the project is the teaching aid and not the teaching end. When the teacher views the student's work experience or the project as something contrived to give rise to the need for learning rather than something to be completed at such a time, he is on the way. Then he can apply problem solving in shop or in relation to tasks faced by the student during work placement as well as with farming programs. Maybe we will recognize the excellent use made of project-centered instruction in other areas of high school instruction and copy some good ideas rather than doing what comes naturally over and over again. Is there so much difference, after all, in the search for an unknown in a chemistry lab and the search for a good ration in the vocational agriculture class? □

Finding the Time for Quality Teaching

J. C. ATHERTON, Teacher Education, Arkansas



Some years ago as an undergraduate I handed in a term paper at the final deadline with the excuse that it was not in good shape because of lack of time. Later when the paper was returned it was marked with a low score and a few choice bits of wisdom from the instructor.

One comment seemed on the harsh side at the time possibly because it so completely cut through my flimsy excuse. I was rudely informed that I

had all the time that was available to the others in the class. In fact an additional comment was that I had all the time there was.

If I have all the time there is and don't have enough time to do what should be done it seems that something must be amiss. A probable diagnosis may be poor usage of time or lack of proper work organization. This is a most common ailment it seems.

Many of us have heard someone

say they wish the day had twenty-five hours so they could have additional time to do what they feel should be done and very likely we have all had a similar desire at times when work is piled high and the deadline is too soon. It is reported that an executive in one of our largest cities had a clock constructed with thirteen hours marked on its face. Others have tried daylight saving and a multitude of devices attempting to stretch the work.

The answer to the problem of a time shortage does not rest with the use of gimmicks it seems but with a conservation and proper usage of each moment we have. It's not so much a problem of the number of hours we work as it is the amount of work we put into each hour.

The following are some ways in which we can increase the effectiveness of our activities and acquire more time for the essentials:

1. Organize your day.
2. Concentrate on the essentials.
3. Look ahead.

Organize your day. There are a variety of routine items which are on the agenda of each day's activity. These should be so arranged and scheduled that they may be completed with dispatch. Some activities may be pressing and require immediate attention. Of course, these should be given top priority in our schedule for the day. Then there are many things which have no deadline or one which is sometime in the future. By keeping a current list of these handy we may refer to it from time to time and "sandwich in" some of the activities as we participate in our daily routine. By being aware of what is coming up we are able to care for some things at the most convenient times and also we have some time in which to make appropriate contacts and secure required assistance and materials. This in itself may be a time saver in the long run. It is important

that we determine the best procedures to use. There is no one best method for accomplishing each task. The specific activity plus other factors will influence our decision relative to the approach to make.

Concentrate on the essentials. The primary task of the teacher of agriculture is one of education. It is easy to become sidetracked and spend large blocks of time on trivial items. It seems expedient that we put first things first and then provide for the less important elements to the extent that it is convenient to do so. This assumes, of course, that we know what are the essentials.

A statement by Joan Younger seems appropriate: "There are only a handful of things that actually have to be done in this world, and there is time for all of them. The trouble is that most of us get to doing so many things that we have no time to be."

One of our most famous sluggers in baseball was asked by a news reporter what was on his mind when he came to the plate. He is reported to have said that he had only one thought while at bat—hit the ball. Can we apply this to our tasks?

Look ahead. It was reported that many planners spent months in planning the intricate details of the Normandy invasion of D-Day. A shortage of a critical item could have led to serious consequences and even disaster. Similarly, a failure to prepare for each of the major activities of the

teacher of agriculture may produce results which are not conducive to harmony and to long tenure in the community for the teacher.

Resources in the community which may facilitate a job are not always available on the spur of the moment. Also, there is a much greater likelihood that we can secure the assistance of others from time to time if we contact them several weeks in advance. Time may be better utilized too by combining two or more activities which are closely related.

If you don't know where you are going or why, any path will lead you there. The likelihood, however, is that success will not be at the end of the trail.

In the conduct of the program of vocational agriculture there seems to be considerable truth in the statement that a little forethought will save lots of afterthought.

In summary it seems that there is some wisdom in the following advice:

- Do more than exist Live
- Do more than touch Feel
- Do more than look Observe
- Do more than read Absorb
- Do more than hear Listen
- Do more than think Ponder
- Do more than talk Say something
- Do more than dream Plan
- Do more than plan Follow through

Teaching Basic Principles in Science in the Vocational Agriculture Curriculum

C. E. RICHARD, Teacher Education, Virginia Polytechnic Institute



We have heard inferred many times that vocational agriculture is not a scientific subject, that science related to agriculture is not taught, that there is not enough depth and real meat in the vocational agriculture program. Do we accept these beliefs as being true or do we shrug them off and say they are made by people who do not know the facts and do not understand what we are doing?

I am confident that science as it relates to agriculture has been taught since the beginning of vocational agriculture, is being taught now, and will continue to be taught in the future. However, I am equally confident that

not enough science as it relates to the industry of agriculture has been taught and that in some cases the above accusations are justifiable. If this is true the time is past due for doing something about it.

This problem is not new. It has been with us a long time. To give an example, I refer to a study made in the late twenties by Henry W. Schmitz, who was a vocational agriculture teacher in Kansas. His study was to find out what science was taught in animal science units.

This study included 110 teachers in 20 states and clearly showed that certain basic principles in bacteriology,

botany, chemistry, entomology, genetics, physics and zoology were being taught by vocational agriculture teachers.

The following statement was contained in the foreword of the bulletin giving the results of this study and was written by L. B. Pollom, State Supervisor in Kansas in 1929. "The intelligent performer is one who understands "why" as well as "how" a certain procedure is to be followed. His understanding of "why" distinguishes him from the "rule of thumb" performer. If a farmer, or future farmer, is to possess initiative and resourcefulness, and develop ability to

think intelligently through the problems of production and distribution, it seems essential that he have a working knowledge of the sciences underlying and closely related to agriculture."

That is just as true today as it was 34 years ago. The need for teaching basic principles was certainly recognized.

W. A. Ross wrote a bulletin in 1936 entitled, "Interpretative Science and Related Information in Vocational Agriculture," which emphasized the importance of teaching science as it relates to agriculture.

We in vocational agriculture have done a better job of teaching "how" than we have of teaching the "why." There is little doubt that our teaching has been limited, too much, to practices that change very rapidly, whereas basic principles produce results over and over again, therefore, they become the essential foundations of education in agriculture and constitute the basis for making sound decisions and for the application of skills and techniques.

It has long been established that agriculture is based upon fundamental scientific facts and practices in agriculture are determined by these underlying scientific principles whether it be in production, processing, distribution or any other segment of the agricultural industry.

Let us remember that a practice may become outdated before it is ever put to use. The rapidity of current change can be illustrated best by the fact that of all students who entered the first grade this year, 50 per cent will work in jobs not now known when they graduate from high school. On the average a person in the United States will hold 3 to 4 different jobs in a life time.

What constitutes acceptable science content in vocational agriculture?

1. That it be on a high school level. We must clearly articulate its relationship to college level training.
2. That it relates rather specifically to the industry of agriculture.
3. That the scientific content of the courses in vocational agriculture be coordinated with other science courses in the high school to avoid unnecessary duplication. Review or some duplication may be desirable.
4. That adequate basic science as it relates to agriculture be included in the units taught to develop the student's understanding and appreciation of the fundamental principles and procedures involved that apply to the various segments of the total industry of agriculture.

Some principles to observe

1. "Science" as such, should be taught by the science teacher (chemistry, biology, physics).
2. In teaching vocational agriculture, it is sometimes more important to emphasize the "why" rather than the "how." If a person knows why he should do something he is more apt to do it than if someone just told him it should be done.
3. The primary functions of the teaching of science by the vocational agriculture teacher are:
 - a. To help the learner understand why he does something in a particular way; to develop understanding and appreciation.
 - b. To recognize alternate ways of doing things because the underlying science is the same.

- c. To prepare the learner to solve related problems as they arise in future life situations.
- d. To give thoroughness to the instruction.
- e. To strengthen learning. As many relationships as possible should be established or pointed out with other sciences in the high school and with current happenings in the world of science.

What are some of the problems with which we are faced in teaching basic principles in vocational agriculture?

1. How far to go in teaching basic principles or how much related science is needed for a vocational agriculture student to develop a proper understanding?
2. How to keep it from becoming too academic?
3. How to secure adequate application?
4. How to cut down the great store of scientific knowledge to the vocational agriculture student's size?
5. What research is needed to give some of the answers?
6. Supplying adequate references.
7. Preparing teachers to implement programs emphasizing the scientific side of agriculture. Practices have generally been over-emphasized as compared to basic principles and science in training teachers.
8. Duplication of what is being done in other courses in the high school program.
9. How to group students with diversified interest in agriculture for effective teaching?

Fellowships and Assistantships Available for Graduate Study in Agricultural Education

V. R. CARDOZIER, Teacher Education, University of Maryland



In the fall of 1962, a survey was conducted under the auspices of the American Association of Teacher Educators in Agriculture (AATEA) to determine the assistantships and fellowships that would be available for graduate students in agricultural edu-

cation during 1963-64. The results of that survey appeared in the February 1963 issue of *The Agricultural Education Magazine*.

At the request of the executive committee of the AATEA, all institutions offering graduate study in agri-

cultural education were surveyed again in the early fall of 1963 to secure the same information for 1964-65. The results of that survey appear below.

As in the previous listing, only limited data are provided, and no at-

tempt has been made to provide information relating to course load, admission policies and academic requirements. Interested persons should contact respective institutions for such information.

No attempt has been made to list assistantships and fellowships provided by most universities which are open to all students; the listing is confined to those assistantships and fellowships which are designated for persons pursuing graduate study in agricultural education.

Data provided are in the following order: nature of assistantship or fellowship (number available); number of months available during year and beginning month; amount of work expected, if any; monthly remuneration, and other considerations such as remission of fees; whether aid is for masters' or doctoral students; source of funds, if reported; and the 1964 deadline for application.

University of Arizona

Research assistantship (1); 12 mo. (11 mo. work), July 1; ½ time (approx. 20 hrs. per week); \$233 per mo.; exempt non-resident and certain lab fees; masters' students; apply by March 1.

University of Arkansas

Research assistantship (1); 9 mo., September; ¼ time; \$125 per mo.; doctoral students; apply by April 1.

Auburn University

Research assistantships (2); 12 mo., open any month when not assigned; ¼ time; \$120 per mo.; masters' or doctoral students; apply at any time.

Clemson College

Research assistantship (1); 12 mo., June or September; ½ time; \$200 per mo., reduced tuition; masters' students; apply by June 1.

Cornell University

Assistantships (5 teaching, 1 research); 10 mo. (2) and 12 mo. (4); June or September; ½ time; \$187 - \$250 per mo., tuition remitted; either but preference to doctoral students; 4 - state funds, 1 - Ford Foundation, 1 - Experiment Station. Apply by March 15.

East Texas State College

Research assistantship (1); 12 mo., June or September; ½ time; \$200 per mo.; masters' students; apply January or June.

University of Illinois

Research assistantships (2-3); 9 mo., September; ½ time; \$250 per mo., tuition & fees remitted; doctoral students; apply as early as possible but not later than August 26, 1964.

Research assistantships (2); 9 mo., September; ¼ time; \$116 per mo., tuition & fees remitted; masters' students; apply not later than August 26, 1964.

Research assistantships (2); 9 mo., September; ¼ time; \$125 per mo.; doctoral students; apply by August 26, 1964.

Iowa State University

Research assistantships (2); 9 mo., September; ½ time; \$255 per mo., reduced tuition; masters' or doctoral students; experiment station; apply by April 1.

Louisiana State University

Research assistantships (3); 9 mo., September; ¼ time; \$100 per mo., reduced tuition; masters' or doctoral students; university funds; apply by August 1, 1964.

University of Maryland

Research assistantships (3); 12 mo., June or September; ½ time; \$200 per mo., tuition remitted; masters' students; apply by April 1.

National FFA Fellowships (4); 10 mo., September; part-time experience in National FFA Office; \$300 per mo.; masters' students; sponsored by Massey-Ferguson, Inc.; apply by April 1.

Michigan State University

Instructorships, part-time (2); 9 mo., September; ½ time; \$333 per mo., out-of-state tuition (over \$500) waived; doctoral students; reimbursable vocational education funds; apply by February 1.

Teaching & research assistantships; 9 mo., September; ½ time; \$244 per mo.; masters' or doctoral students; apply by March 1.

University of Minnesota

Teaching assistantships (2); 9 mo., September; ½ time; \$250 per mo., reduced tuition; masters' or doctoral students; college funds; apply by April.

University of Missouri

Research assistantships; 10 mo., September; 10 hrs. work per week; \$150 per mo.; masters' or doctoral students; apply by April.

North Carolina State College

Research assistantship (1); 10 mo., September; ¼ time; \$240 per month; masters students; apply by February 1.

Ohio State University

Teaching and/or research assistantships (3-5); 12 mo., June or September; 15 hours per week; \$200 per mo., out-of-state tuition waived; doctoral students; apply by March 1.

Oklahoma State University

Teaching assistantship (1); 9 mo., September; 22 hrs. work per week; \$225 per mo., reduced tuition; masters' or doctoral but preference to doctoral students; apply by March 25.

Pennsylvania State University

Teaching & research assistantships (4-5); 12 mo., June or September; ½ time (20 hrs. per week); \$178 per mo., tuition & fees remitted; masters' or doctoral students; apply by January 1.

Purdue University

Research assistantships (2); 10 mo., September; ½ time; \$230 per mo., reduced tuition, fees remitted; masters' students; university, state and federal funds; apply by May 1.

Instructorship (inservice teacher training); 10 mo., September; ½ time; \$320 per mo., reduced tuition, fees remitted;

doctoral students; university, state and federal funds; apply by May 1.

Rutgers University

Research assistantship; 12 mo., September; ½ time; \$...?...., fees remitted; masters' or doctoral students; apply by March 1.

Texas A & M University

Teaching assistantships (3); 9 mo. (2) and 12 mo. (1); September (2) and July (1); ½ time; \$175 - \$200 per mo., certain costs remitted, adjustments for non-resident fee; masters' students; apply by April 1.

University of Wisconsin

Research assistantships (2); 12 mo., June or September; 20 hrs. per week; \$240 per mo., out-of-state tuition remitted; masters' or doctoral students; apply by March 15.

Virginia Polytechnic Institute

Teaching assistantship (1); 9 mo., September; ½ time; \$200 per mo., out-of-state tuition remitted; masters' students; apply by March 15. □

From Former Issues

Back in 1936 H. M. Byram wrote ". . . it is clear that agriculture and farming should not be thought of as being synonymous. The many types of farming embrace the largest crop and the most important of agricultural occupations. We should also consider several other fields, however, in addition to the production occupations. There is a whole host of occupations related to production and to processing and distribution of agricultural products. This group is growing in prominence and in importance. Then there are the occupations in agricultural represented by teachers, county agents, extension specialists, cow testers, etc. Closely allied to them are the occupations in agricultural publicity. The agricultural service occupations have come into prominence in recent years. This group included civil service occupations in agriculture as well as noncivil service. Examples of workers in occupations in this group are agronomist, forester, erosion control superintendent, landscape architect, land appraiser, etc. Occupations in agricultural research will become increasingly important. If we add to our occupational group those involved in the manufacture, distribution and service of special products for farmers we have a large group, indeed." □

"Be not afraid of life. Believe that life is worth living, and your belief will help create the fact." William James.

The Problem Method and Nondirective Guidance

HAROLD CHASE, Teacher of Vocational Agriculture, Ufca, Nebraska



For years it has been the more or less official responsibility of the vocational agriculture teacher to provide the guidance services of the small rural high schools. Through the continued need for justification of the vo-ag program, guidance has become more directive than it should be—the already overburdened vo-ag teacher, with his intimate knowledge of the student's home life and parents' attitude, became the logical consultant when problems only vaguely connected with agriculture need an airing. In the past, when a student came to me with an adjustment problem toward his fellow student or another teacher, I tried talking to the particular student or the teacher in question, and usually ironed out the situation to the satisfaction of all. Usually, the same student was back within another month—this time displaying another grudge toward a different group (or his parents) and again I tried helping him, by *changing the environment to fit the students' needs*.

There is no question in the mind of the vocational agriculture teachers, general educators, administration and even psychologists, that the "Problem Method" of teaching is the most effective method of training students to solve their own problems as well as educational ones. If a nondirective approach, such as the "Problem Method" of teaching, is so effective in educating students, why then should not a nondirective, or "Problem Method" approach be used in guidance, and be more effective?

Using the Conference Hour

Usually, a student comes to the vocational agriculture teacher during a conference hour, set aside during the day for counseling, programming FFA activities, individual instruction in farm or shop programs, and occupational guidance. However, the longer I teach the more the need for counseling in personal problems becomes evident. In many cases, the problem of the student is quite apparent or already known to me. But it seems important that at this time we should

resist temptation to bring about a conclusion as rapidly as possible (after all, time is so scarce) by asking direct questions. We should instead allow the student to express his problem or concern freely, with just a guide question from the teacher, at most.

It is all too common for us to observe a student with problems at home, or an adjustment problem to other students, causing disciplinary problems in the vocational agriculture class or shop. Our program is of necessity less rigid and confined, and the student has more opportunity to cause trouble. We often see those students adjust to whatever is bothering them, and become better students because they were able to work out a solution to their own problems. This actual step *forward* is important in fitting him to take his role as a mature citizen in a society where problems of adjustment are most common.

Giving Advice to Students

What do we do when a student, during the course of counseling, asks for direct advice?

This should be handled in the same manner as a question coming up during a problem-solving classroom hour. The teacher should give the student



A desirable setting for problem centered guidance.

some type of readable information in the area of the problem much in the same manner problems are solved during classes. He should then invite the student for another conference, where the problem can be discussed again, after the student has gained some insight *himself*, by reading thoughtful and suitable literature supplied by the teacher. To your astonishment, you will often find that the student upon his return for the follow-up conference has quite happily found the answer himself, and might not even touch upon what was such a problem yesterday! Congratulate yourself! You have now graduated from "general wet nurse" to Teacher and Counselor!

We know that the entire conference cannot and should not be used for personnel counseling. But the problem-method can also be used for other aspects of the conference hour. How can you apply this method to, for instance, shop instruction conference for the individual? It has been brought home to me in many instances, that it is often better to let the student work out his own approach to how something should be welded or fitted together, although we might watch from afar, nervously chewing our nails, confident that the whole thing will be a mess. But what was it Gene Fowler said in *Skyline*: "I am glad that I paid so little attention to good advice; had I abided by it, I might have been saved from some of most valuable mistakes." It certainly applies here.

Students Must Reach Decisions

In occupational guidance, a teacher of Vocational Agriculture may be the best authority on agricultural occupations, but he often forgets that it is of great importance that the student seek and find the job for which he feels himself best suited. A boy may have an aptitude for both Agricultural Engineering and Tractor Mechanics—but if he does not wish to go to college, and would rather apply actual skills, it is better to help him understand the trade he chose and act with dignity and pride for his achievements.

I once knew a plumber who was ashamed of not having gone on to "higher things," and who was imagining that the community looked down upon his trade. Actually it was his *own* attitude toward his trade which people picked up, and which reflected unfavorably upon him. Our long-range responsibility is Vocational Agriculture is to guide the student in his attitude toward whatever work he chooses, and to help the community understand the importance *not only of Education, but also of trade.*

As an FFA Advisor

I have found the best justification of "nondirective" approaches as I tried to set up a complete vocational agriculture program and FFA at our High School. The FFA, *ideally* a completely democratic boys organization, is in *reality* often held together by the

advisor and his untiring efforts! Many Vocational Agriculture Teachers tire of this constant effort, and come to resent the FFA meetings as another thing to take him away evenings. I have found that with a nondirective approach to your "advising" things will get *done* and continue to get done in a surprising manner. My greatest reward for "holding my tongue" came when a student handed me an issue of the *National Future Farmer* magazine, in which his prize-winning essay on "What Future Farming Means to Me" was printed! And he had done this without any prompting from me, his greatest reward being the knowledge that he had done so entirely by himself! This meant more to him than the prize money. How wonderful it was on Memorial Day to drive through town and see the flags and banners displayed by the FFA boys who had

gotten out of bed at 4:30 in the morning to do this—because it was "their idea." I remembered for a moment the times when I went to their meetings just bursting with suggestions, but held my tongue, and let them develop their own ideas.

Most of us, throughout out teaching career, become so accustomed to directing our students around, that it will be quite hard at first to become "nondirective" teachers. We may be acutely uncomfortable sitting there "on our hands," so to speak, without speaking up. But let us again recite our pledge as advisors to these boys—remember, it states: ". . . as the need arises." And I have found that by adopting my new-found philosophy of noninterference, "the need arises" less and less, and I find my valuable time spent on projects more beneficial to the whole school. □

Michigan FFA Poultry Contest Keeps Abreast of New Technology

DR. CHARLES SHEPPARD, Extension Specialist in Poultry, Michigan State University
WILLIAM A. HOUSEHOLDER, Assistant Instructor Agricultural Education, Michigan State University

Any technological change in agriculture creates a situation in which teaching in agricultural education must keep abreast of the change and FFA judging contests should also reflect that



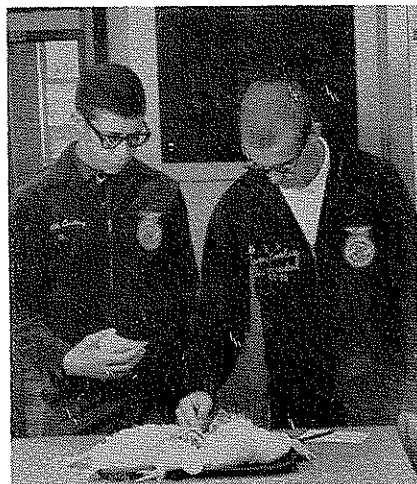
change. However, we often find FFA boys participating in contests which reflect the technology of agriculture during the horse and buggy days. It was basically to avoid this situation that we in Michigan have continuously revamped the State FFA Poultry Contest

The major change which has occurred in the poultry business during the past few years is that the poultryman now considers his flock as a population of birds rather than a flock consisting of individual hens.

The net result has been new skills and practices that have replaced many familiar poultry skills of the past. In 1963, the State FFA contest included: (1) strain selection (2) poultry management (3) egg grading and (4) grading of dressed birds.

Emphasis on Ability to Make Decisions and to Analyze

Commercial poultrymen no longer cull their flocks on an individual basis. In the first place, selection of baby chicks is made on the basis of a family or a strain which introduces the factor of homogeneity. After birds with physical defects are removed from the flock, theoretically all hens will be nearly uniform in production.



Al Conley, left, and Jim Cooley inspect a dissected bird during the anatomical identification section of the 1963 State FFA contest. The boys were required to identify an abnormal organ and an intestinal parasite which this particular bird contained.

Therefore, extensive individual culling of birds is unnecessary.

The revamping of the Michigan FFA poultry contest has included changes which no longer require contestants to cull live birds on the basis of their ability to produce. A Strain Selection Contest has been substituted in which the contestant is given complete data on several egg producing characteristics of four different strains of birds. These are actual data taken from the most recent Random Sample Test Summary. The contestant, in a specified time, studies the data and makes the decision as to which strain he believes would be first, second, third, and fourth best as layer stock.

A companion to the Strain Selection Contest was the Poultry Management Contest. While the first requires a boy to make a decision, the latter requires him to analyze four management situations and determine their rank according to operational efficiency. Each management situation was described to the contestant with facts and fig-



FIGURE 1.

Michigan State University Poultry Science Department
Poultry Farm Records for FFA Judging Contest
May 4, 1963

365 days	Farm A	Farm B	Farm C	Farm D
1. Number of Birds	4500	6700	5600	6300
2. Number of eggs produced doz. produced	1,034,000 86,200	1,578,000 131,500	1,416,000 118,000	1,567,000 130,600
3. Dollars received for eggs marketed	\$27,730	\$40,860	\$38,840	\$45,800
4. Pounds of feed used and cost	456,600# \$17,200	609,000# \$22,200	464,000# \$16,680	551,900# \$19,500
5. Number of large eggs, or better produced	eggs— 651,000 doz.— 54,200	eggs— 646,800 doz.— 53,900	eggs— 700,000 doz.— 59,000	eggs— 820,060 doz.— 68,400
6. Mortality—number of birds that died	840	570	460	540

ures, in the form of a written description. Depending on the type of situation, photographs could have been used or students could have been taken to view actual situations. A second characteristic was that only one aspect of management was emphasized. Again actual farm data were used.

The 1963 management problem (Figure 1) centered around production factors affecting net income. The problem was given to the contestants along with the work sheets (Figure 2) on which were listed the production factors to be used in analyzing and comparing the four management situations. Each boy was required to show his skill and ability in determining an answer for each of the factors for farm A on the work sheet and as many as he felt were necessary for each of the other three farms in order to adequately compare them. He then ranked the four farms and explained his order of placing.

Egg Grading

The traditional type of egg grading and candling contest was retained with the exception that after contestants graded all 25 eggs by candling, each boy brought his last three eggs to the judge's table where the student broke them out and verified the grades that he had given them.

The Haugh method of commercial grading which is becoming increasingly popular in the United States will be introduced to the 1964 FFA Poultry Contest. It was felt that not enough teachers had yet included this

method of grading in their courses of instruction to include the Haugh method in the 1963 contest.

What's Normal and What's Abnormal

One of the most interesting parts of the new contest was the identification of twenty-five diseases, parasites and anatomical parts of a chicken. The emphasis in this part of the contest was to determine if the boy could distinguish abnormal from normal physiology. This contest becomes more real in proportion to the

availability of real specimens. However, caution must be used in arranging for students to identify poultry diseases to avoid the spreading of a disease through contamination of clothing. Authentic pictures might have been used as a substitute for actual specimens where spread of disease is a serious problem.

Dressed Birds

For the 1963 contest we continued the grading of dressed birds. However, in the future we will select three or four birds from four or five strains of broilers, dress them out, also present the growth data on the birds and let the students decide which strain proved most profitable considering all economic factors, weight, dressing percentage, and carcass grade and price.

Conclusions

To fully evaluate the effectiveness of these changes in the state contests will require some time. Teachers will need to incorporate more of the content in their instructional programs. At the same time, it is imperative that our FFA contests, at both the state and national level, be kept abreast of the most modern practices in the field. To lag behind in this respect is to invite the accusation of being out-of-date in our programs. □

FIGURE 2

Poultry Management Section of State FFA Poultry Judging Contest

Placing	1st	2nd	3rd	4th
Management factor, please calculate items listed below	Farm A	Farm B	Farm C	Farm D
1. Number of eggs produced per hen per year	eggs	eggs	eggs	eggs
2. Percentage production per hen per year	% prod.	% prod.	% prod.	% prod.
3. Percentage of large eggs produced	% Lg. eggs	% Lg. eggs	% Lg. eggs	% Lg. eggs
Ave. price of eggs received per dozen	¢/doz.	¢/doz.	¢/doz.	¢/doz.
5. Percentage mortality per year	% mort.	% mort.	% mort.	% mort.
6. Feed consumed per dozen eggs produced	lbs./doz.	lbs./doz.	lbs./doz.	lbs./doz.
7. Feed cost/doz. produced	¢/doz.	¢/doz.	¢/doz.	¢/doz.

Teaching the "Fundamental Understandings" in *Elementary Soil Science*

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There are a certain number of "fundamental understandings" essential to proper comprehension of soil-water-plant relationships, and from there—basic principles of soil-management. This article endeavors to describe one way of teaching these fundamentals on the 9th grade level, using a series of demonstrations and/or laboratory exercises, and only very simple equipment. I have found this method to be very successful. We shall deal here only with the physical aspects of soil-science. The questions posed, and the ways of finding the answers will be fully described. The choice and wording of the questions, and the choice of the exercises must, obviously, be adjusted to class-level and background.

I. *What is soil?* Students observe soil particles (sand, loam, clay) under the microscope. Using the microscope at this stage is an important motivational factor.

Answer: Soil is (in the main) made up of rock particles, varying in size and aggregation.

Fundamental Understandings: Physical (mechanical) composition, soil structure, soil separates, types of soil.

For reinforcement of above use:

1. Flannel-board (2-dimensional models of soil particles and aggregates)
2. Plasticene—3 dimensional models of above.

II. *How are these "rock particles" produced?*

This discussion on weathering-processes is optional, but if entered upon, the following essential demonstrations are suggested:

a. *Heat-Cold effect* (example of physical weathering)

Heat a microscope glass slide in a flame and put it immediately upon an ice cube. The glass will show a network of cracks. Repeat with same slide—the glass will now shatter into fragments (if it doesn't, repeat a third time)

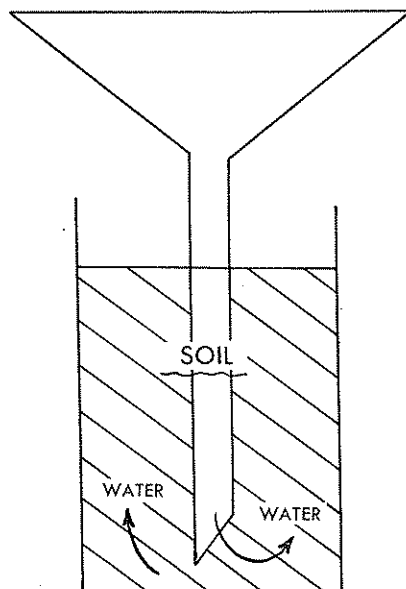
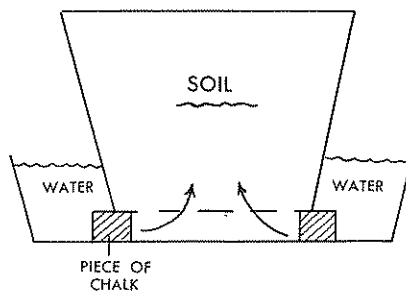
b. *Acid effect* (example of chemical weathering)

Obtain a piece of limestone (polished marble is better) and a smooth piece of flint. With a medicine dropper put a few drops of dilute acid on both. Compare for effervescence (what is happening?), wash off acid and compare surfaces (what has happened?).

Compare the two exercises. In which case will the *chemical* composition of the soil be the same as the rock's?

III. What is the significance of having different sized particles and different soil structure? What is there between the soil particles? (Use the plasticene models again here).

Fundamental Understandings: Pore space (macro-pores *between* aggregates, micro-pores *within* aggregates).



IV. Which soils have the largest over-all pore space? (Here pupils usually are quite wrong).

Demonstrate—Equal volumes of *dry* sand and clay—weigh. Why does the sand ("light" soil) weigh *more* than the clay ("heavy" soil)? If pupils do not "catch-on":—What is there in between particles in *dry* soils? More space—more air—less weight.

Fundamental Understandings: Volume weight of soil ("pseudo-specific" weight) What then is the "real" specific weight of soils?

If pupils are interested, there is a simple demonstration/exercise to determine the percentage of over-all pore space. This gives surprisingly accurate results:—

Use beaker and plastic funnel. Measure exact volume of dry soil (have groups of pupils use different soils for comparison). Pour soil into beaker around funnel (one pupil holds funnel, the other pours the soil). Tamp soil down slightly. Take exact amount of water in measuring cylinder and pour into funnel—easy does it! Otherwise, there will be air bubble stoppages. Continue till surface is wet. (Why does it take so much longer in heavy soils than in light soils?) Calculate volume of water used as percentage of volume of soil. Pupils may want to do this exercise on soils from their home farms.

V. What information of *practical* importance do we derive from obtaining the volume-weight? Where will plants (seeds, roots) get more water, more air? Why is this important? Pupils probably will not have the right answers ready, so let's find out!

VI. *Which soils will hold more water?*

Use two paper cups, punch holes in bottom (from the inside), cover bottom with piece of filter paper (newspaper will do), fill up one with dry sand, the other with dry loam or clay (after passing through 2mm sieve). Weigh. Immerse in

water bath (soup plate will do) till surface is wet. (Surface gets wet much quicker in sand—why?) Remove, let drain off for a few minutes, weigh again. Calculate difference as percentage of dry weight of soil. Homework: Pupils determine “water-holding” of soil of their home farm.

Fundamental understandings: Field-capacity. Which soils have greater, which smaller field-capacity? Why? Has this something to do with pore

space? If so, which kind of pores are the “water-holding” ones and which are letting the water drain off?

(As an optional exercise at this point, a demonstration of various speeds of water-percolation in light and heavy soils may be useful.)

VII. What is the difference in soil-water-air relationships between the final stage of the “pore-space measurement” and the final stage of the “water-holding” measurement?

Why? What did we *do* differently? By the way, why didn't we just pour the water on *top* of the soil in these exercises? (Trapped air.)

Fundamental Understandings: Saturated soil vs. soil at field capacity. Water-air relationships.

VIII. What would plants prefer? Why? What can the farmer *do* in order to create an optimal water-air ratio? (Problems of seed bed preparation, drainage, irrigation, etc.) □

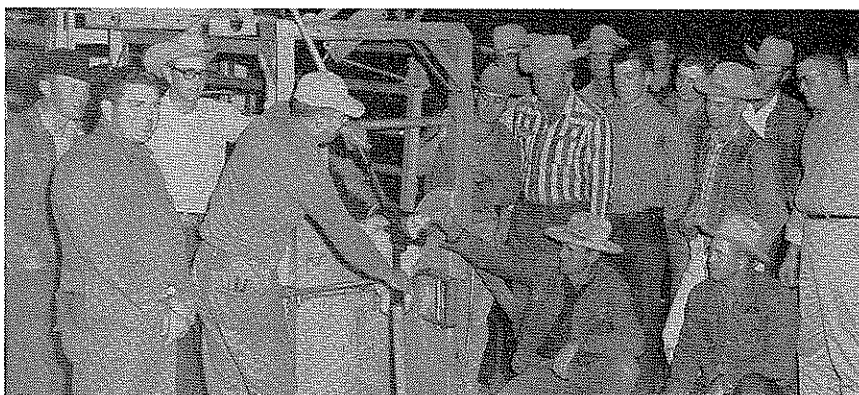
Using a State Directory of Resource Personnel for Adult and Young Farmer Education

E. L. TINER, Consultant, Young and Adult Farmer Education,
Texas Education Agency, Austin, Texas

Hundreds of specialists are helping vocational agriculture instructors teach young and adult farmer groups in Texas; what's more, services of these specialists are free.

The specialists, resource personnel as they are commonly called, are drawn from many walks of life. Services of men in business, industry, agriculture, government agencies, and various other occupations who, because of their training and experience are specialists in some particular field, are utilized in providing educational programs for farm groups. Thus farmers gain benefits from the vast knowledge which these resource personnel have gained from years of experience in their respective fields. To add to the advantages of the system, the resource personnel thoroughly enjoy providing education programs—the enthusiasm the farm groups show for new knowledge and new skills that may help them make a better living is contagious; resource personnel become enthusiastic about providing programs, and vocational agriculture gains a host of new friends and supporters as a result. Moreover, a lot of key people for the first time are understanding the role of the vocational agriculture teacher plays in adult education, and they are telling others about it.

Through use of resource personnel, the vocational agriculture teacher serves more or less as a coordinator for securing and utilizing the services of specialists instead of knocking himself out making the meticulous preparation required for effectively teaching ex-



Foy Lowe of the Franklin Serum Company is shown demonstrating one of a series of livestock skills for members of the Cooper, Texas Young Farmer Chapter. Lowe provided over two dozen such programs during the past year.

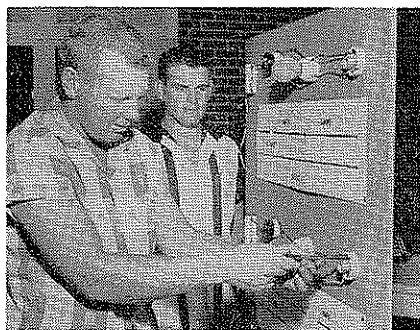
perienced farmers and ranchers. Before the vo-ag teacher begins his work as coordinator, however, he guides a committee of key farmers in setting up a series of educational programs extending over a 12-month period, programs carefully calculated to bring the farmers and ranchers the kind of information and training they need. Once a 12-month program has been outlined and approved by the adult group, the educational program committee thumbs through a *Directory of Resource Personnel Available for Adult and Young Farmer Education* and select from it the personnel available in a given location and which they feel best qualified to provide the kind of programs planned. The vocational agriculture teacher may be called on to provide one or more programs in the series, but most adult organizations rely heavily upon resource personnel for programs.

Catalog Available

Finding specialists in a particular problem area is easy. Names and addresses of resource personnel, their respective specialties, area served, etc. are cataloged for easy reference under appropriate farm problems headings in the directory.

But, how did such a directory of resource personnel come into being? No one individual can be credited with the idea of compiling such a directory. For years it has been the consensus of a number of vocational agriculture leaders that in this age of specialization and technological advancement, farm people look more and more to specialists for answers to their problems instead of the “general practitioner.” A number of vocational agriculture teachers, working with young and adult farmers, evidently were of the same opinion, for they paved the

way for the project by using resource personnel with a high degree of success down through the years. Rapid expansion of adult work in the state brought into focus the need for compiling a directory of specialists whose services were available for adult education programs. Each vocational agriculture teacher and each agricultural education staff member knew a number of resource personnel. Why not pool this information and publish a state-wide list and distribute to all the agriculture teachers in the state? Such a project was proposed. George Hurt, Director of Agricultural Education, Texas Education Agency, gave the "go ahead" signal to begin work on the proposed directory in the fall of 1959. He assigned the author of this article the task of coordinating work on the project.



Homer Kiker, left, and Billy Craiger, of the South Park Young Farmer Chapter in Beaumont, Texas are shown practice wiring to simulate circuits in a home as part of the farm electrification short course sponsored by the Young Farmer chapter in cooperation with Aubrey Sprawls of the Gulf State Utilities Company.

Survey of Sources of Assistance

Area supervisors, vocational agriculture teachers, teacher trainers in agricultural education, and two graduate students in agricultural education all worked together in coordinating personal interviews of potential resource personnel. For this purpose, the following simple survey form was used:

Name of resource person _____
 Occupation or title _____
 Channel of request for service _____
 Specialty _____
 Area services available _____

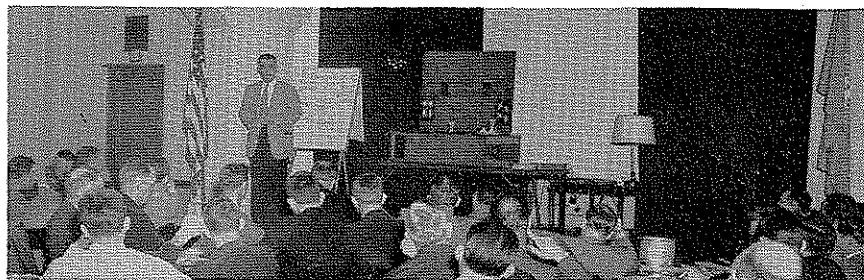
If, in the introduction and at close of program the firm or organization is appropriately credited with making resource person's services available, could the services be provided on that basis alone?

Yes _____ No _____

Other conditions (explain) _____

Interviewed by _____ Date _____

The completed survey forms were turned into the State Office and the job of assembling the directory be-



A class of Vocational Agriculture teachers in a special in-service training course in farm electrification.

gan. It was a simple matter of grouping the various resource personnel under appropriate subject matter areas and listing the individuals alphabetically by firm and organization under each problem area division. Such listings come under the following columns.

*Firm or Organization,
 Name & Title of Specialist*

*Channel of Request
 for Service*

Specialty

*Area
 Served*

The directory itself was divided into two major divisions. One listed those specialists or firms able to provide programs on a more or less state-wide basis; the other major division listed, by vocational agriculture areas, those able to provide service only within the limits of a specified area.

Some Examples

Of course firms and organizations with resource personnel available for use in adult education are too numerous to name here, but a few samples are given below:



Part of the 70 farmers attending the flame cultivation demonstration sponsored by the Mitchell County Young Farmer Chapter in cooperation with Mayes Butane and the Gotcher Engineering Company. An example of use of resource personnel.

Portland Cement Association,—staff of 10 agricultural engineers to provide programs on all phases of concrete construction for farm and ranch purposes.

Central Power and Light Company of Corpus Christi,—a staff of 10 specialists qualified to bring programs on all phases of farm electrification, one agricultural engineer to bring programs on tractor maintenance and maintenance and operation of farm machinery and equipment, and another specialist to bring programs on livestock production.

Olin Mathieson Chemical Company,—staff of 14 men to provide programs in any section of the state on soil testing, fertilizers, insecticides, and anhydrous ammonia.

American Cyanamid Company,—staff of 10 men qualified to provide programs on health management and prevention and control of diseases of livestock and poultry.

Such organizations as the soil conservation service, production credit associations, federal land bank, national farm loan associations, and social security administration can provide an impressive number of men for use as resource personnel on topics of vital interest to farm groups, especially young farmers.

As George Hurt, State Director, Agricultural Education, puts it, "I know of no other single factor giving greater impetus to strengthening adult and young farmer education in our state than the providing teachers with a dependable source of educational programs through the Directory of Resource Personnel." □

THEMES FOR FUTURE ISSUES

- May Today's Classrooms and Shops
- June Evaluating Local Programs
- July Vo Ag and Vocational Education
- August Developing Leadership
- September Teaching High School Classes
- October Advising the FFA



Promoting Better Supervised Farming Programs

JOSEPH N. AUDEL, Teacher of Vocational Agriculture, Pender, Nebraska

The heart of the vocational agriculture program has been and always will be the student's supervised farming. The "learning by doing" concept has made vo-ag the most successful of all educational programs; regardless of the measuring stick used. Other vocational fields such as Trades & Industrial Education are beginning to use this method and others wish they could find some way of adapting it to their program.

However we cannot afford to be complacent, no matter how successful our vo-ag program may be. There are always improvements to be made and we should strive towards even more diversified and larger supervised farming programs. One major area which should be expanded in the present program is the number of different production enterprises per student. Because farming is becoming more specialized and farms are larger, it seems a variety of enterprises would not be as important as developing a larger enterprise which would enable a boy to become established in farming. However we must remember that more of our high school vo-ag graduates are going into agri-business occupations than ever before, and these jobs require a broader background and a knowledge of all types of livestock and crops.

Starting Freshmen on Farming Programs

The best way I have found of getting freshmen boys started with a satisfactory farming program and branching out once established is through the use of livestock and certified seed chains. Our FFA Chapter has a crossbred swine chain which has proven to be very successful in getting needy freshmen in business. A crossbred chain is easier to operate and is better than a purebred chain for this purpose; although the purebred swine chain does have its place in the Chapter. A crossbred chain can be started with the purchase of several crossbred gilts for about \$40 each. The boys apply for a gilt and

the supervised farming committee makes the selection, based on need and dependability of the applicant. The breeding is up to the boy, but this can easily be secured for \$5 or the sire on the home farm can be used. The boy keeps the gilt and the litter except for two gilts which must be returned to the Chapter at a minimum weight of 220 lbs. In order to keep the chain from acquiring irregular color patterns we limit the boar to one of the following breeds: Hampshire, Chester White, Yorkshire, or Landrace.

A purebred dairy cow chain and beef cow work best if the cow is put out to a new boy each year, and in return for feeding and caring for the animal for the year, he receives the calf from it. This enables a new boy to receive a purebred calf each year. If the boy keeps the cow returns the calf to the Chapter, the cycle will be three years before a second boy gets a calf. However, both arrangements will work. The FFA members pays for the insurance and breeding fee although the dairy cow can usually be bred artificially free-of-charge.

Our chapter also has a certified seed chain in which the student returns 1¼ bu. of certified seed for every bushel received. Our latest chain is a purebred sheep chain. In return for each purebred ewe received (maximum of three per boy), the boy returns one ewe lamb in the Fall but keeps the old ewe and the remaining lambs in case of multiple birth.

When planning purebred livestock chains, it is best to select breeds not already represented in the Chapter. In this way competition between Chapter members for livestock sales in the community will be avoided and fair winnings will be greater. All the livestock in our chains must be shown at the local County Fair and at the Nebraska State Fair. Certified crop seed must be exhibited in the certified seed division at the State Fair and at the Nebraska Wheat Show in the Fall. Once a boy has exhibited it takes little encouragement to get him to show again the following year. Although

the crossbred swine chain and certified seed chains are a minor source of income, the other chains pay for themselves in the sense that there is more purebred livestock in the Chapter and a greater amount of exhibiting at fairs and shows.

Although it seems an oral agreement would be satisfactory, it is best from a business standpoint and seems more authentic if a legal agreement is drawn up for each chain and signed by both the leasee and a Chapter representative. A local lawyer will usually draw up the contracts free of charge or for a small fee. If the chains are to be successful the FFA member receiving the livestock or seed and his parents must fully understand the contract. The boy must also be carefully selected from a field of qualified candidates who can accept responsibility and carry out the project.

FFA Awards Help

One of the major means we use of increasing the size of both livestock and crops enterprises is by awarding individual Chapter medals and prizes for the best corn producers; small grain producer; swine farmer; sheep farmer; etc. Our Chapter presented over 20 of these awards in addition to the regular Foundation metals. Over \$60 was spent on purchasing these metals and prizes from the Future Farmer Supply Service for these award winners. Special metals for each of these awards can now be ordered from the Future Farmer Supply Service and the best time for presentation is at the annual Parent-Son FFA Banquet. A good publicity program including newspaper and radio coverage of the Banquet provides added incentive for members to develop better farming programs in order to win these awards.

Commercially sponsored record-keeping programs with special recognition banquets, awards, and publicity encourages FFA members to broaden their enterprises and do a better job with the record book. Some good projects open for participation in the

Nebraska, Iowa, Minnesota, and South Dakota area are; the DeKalb Corn Achievement program; the Sioux City Jr. Beef Feeders Project; the Ak-Sar-Ben FFA Certified Grain project; the Greater Siouxland Crop Show and grain program; and the Funk's 304 Bu. Challenge Corn Project; as well as many other good activities.

Chapter Loans

A Chapter loan service is also a good activity if adequate capital is available for starting one, and if loans are carefully made with the use of legal credit instruments. A small rate

of interest such as 2% will provide a small amount of income each year for the service. Such capital can probably be best accumulated by holding an "all-out" slave auction which will usually net \$500 and up; depending on the size of the Chapter.

Whatever activities are used to promote better programs of supervised farming, they must be accompanied by frequent and instructional farm visits if they are to be successful. The visit need not be a long one; although during the summer I like to make at least one visit lasting a half day or longer. This gives the instructor a chance to confer with the boy and his

parents and the extra time permits you to "sell" another enterprise or maybe to increase the size of an existing one. Long-range goals can be discussed and partnerships may be recommended if they apply to the situation. When some of the boys increase their programs, others see this and the competitive spirit compels them to improve their's too. Lastly the vo-ag instructor must believe in the supervised farming program himself and be able to sell it not only on its "learning by doing" merit, but also on its ability to develop responsibility in the boy, as well as earn money for future use. □



A Foundation Beef Bull Program for Alabama

H. N. LEWIS, Livestock Specialist in Vocational Agriculture, Auburn, Alabama

Fifteen years ago the vocational agricultural education service, in cooperation with the Sears-Roebuck Foundation, began a beef bull program in Alabama. Fifty-one high quality bulls were purchased from the Mill Iron Ranch, in Texas, and placed with vocational agriculture departments in various Alabama communities. Since 1948, 243 beef bulls have been placed in vo-ag departments throughout the State. Each animal is under the direction and supervision of the vo-ag teacher.

The purposes of the program are to upgrade the beef cattle industry in the State, and to provide educational opportunities for vo-ag students, young, and adult farmers in the production of high quality beef cattle.

The program is largely self-supporting. Bulls are kept in the program under the control of the local vo-ag department for three years. At the end of this time the bulls are sold, preferably to a local cattleman, and the purchase price is returned to the Alabama Future Farmers of America Association for the purchase of a replacement. All bulls are not disposed of in the same year. Each year 15 bulls are sold and 15 new ones are purchased. Each vo-ag department, when requesting a bull, may choose the type and breed needed in the community. A committee made up of the vo-ag teacher, his students, and

cattlemen in the community sets breeding and bull-use regulations.

Bulls are purchased as yearlings, and are grown out for showing for one year. All bulls purchased the previous year are shown at a special Sears bull show at the South Alabama Fair, held in Montgomery during October. They also compete in the open show while at the Fair.

Using Production Records

After the bulls are shown they return to their department's communities for use in breeding programs. The bulls' breeding records are kept on a July 1st-June 30th schedule. Before the vo-ag teachers' annual summer conference in July, these records are judged for the number of breedings, and for the number of herds served. In the judging, consideration is also given to the amount of publicity the program has received in the local community. Teachers who have active bulls in the program are guests at a banquet sponsored by the Sears-Roebuck Foundation, held during the conference. Departments having the top four records receive \$200 toward the purchase of a quality heifer, while the next six departments are given cash awards.

This program has provided one of the main sources for the introduction of quality animals into the Alabama beef cattle industry. It allows local communities the use of a top sire in

their herds for two or three years, which is particularly suited to their needs, and which costs more than most Alabama cattlemen are willing to pay. Bulls from this program have been placed in nearly every Alabama county, and wherever they are located a definite improvement can be seen in the quality of beef calves, and eventually in the quality of brood stock.

The Sears bull program has offered Alabama vocational agriculture students an excellent opportunity to grow into the beef cattle business. Since the program began, many of them have purchased heifers of their own and bred them to their department's bull. This practice has allowed boys to begin small, and by saving heifers, grow into a profitable, quality herd. Because of the availability of the Sears bull in their community for several years, these herds were begun without the prohibitive initial cost of a good sire. Many successful young Alabama cattlemen owe their sound beginning in the beef business to the bulls of the Sears program.

Educational Opportunities Provided

Excellent educational opportunities are provided directly because of this program. The all-day students have responsibility for the care and handling of their department's bulls. They also have the chance to become

familiar with top quality beef sires, and to observe first hand, the benefits of using these sires with herds in their community. Vocational Agriculture teachers find it much easier to "educate" adult farmers to better beef cattle management when the use of one of these bulls is in question. Many cattlemen will build serviceable loading shutes, spraying pens and catch pens just to handle a Sears bull during the time it stays with their herd. They will also go to the expense and effort to improve their pastures

for grazing by the better offspring of a department's bull. Because of the committee's regulations which establish policies for breeding and bull-use, many farmers are required to improve conditions among their herd and on their farms before getting use of a bull.

This program offers a solid, tangible way for local cattlemen to improve their herds, upgrade the quality of their calf crop, learn better beef herd management, and thereby make more money from cattle. It is impossible to

make a dollars and cents estimation of the value placed on this program by both vo-ag departments and people in the communities. The esteem of the vo-ag teacher, his department, and his students has risen noticeably in the public's mind in localities where successful Sears bull programs have been carried out. Similar to swine and dairy chains, the vo-ag bulls are unique in that they offer a real benefit "right now" to cattlemen who are willing to go to the trouble to raise cattle in the best manner. □

Agricultural Occupations— A Course for Seniors

LAYLE D. LAWRENCE, Teacher of Vocational Agriculture, Medicine Lodge, Kansas



During the past several years, a considerable number of articles have been written stressing the need for teaching nonfarm agricultural occupations, but there has been little information in the area of setting up a practical course of study. Vo-ag teachers are of the opinion that it is best to "learn by doing," and teaching related occupations in the classroom is seldom helpful or even interesting to the student. Nevertheless, there are definitely needs for training in these areas when we find that only 2 out of 5 of our vo-ag graduates have the opportunity to farm. However, there are many opportunities in nonfarm agricultural occupations for those who are interested in agricultural occupations.

The author has developed a suggested study course which would provide practical experiences for the student enrolled and which would be independent of the present vocational agricultural program. This was done so that students who had a definite interest in agricultural occupations could be included in the course.

Course Objectives

After discussing the feasibility of such a course with the counselor and the principal, the following objectives were set up:

1. To acquaint students with agricultural occupations common to the community and to the state of Kansas.
2. To gain an understanding of

and experiences in work in selected occupations.

3. To determine the advisability of entering the occupations experienced.

It was determined that approximately 88 class periods would be available during the semester for the course. Keeping in mind the objectives, the following course of study was developed:

10 periods—

Study of self (interests, aptitudes, ambitions, etc.) Exploration of related occupations in regard to job opportunities, type of work, education and experience necessary, working conditions, pay, hours, etc. Preparation of students for work experience.

5 periods—

Reports and Interviews.

- a) Reports—student's aims and ambitions in life. Type of work most interested in, educational ambitions, etc.
- b) Personal interview with each student with regard to interests, aptitudes, intelligence, initiative and ambitions. (Interview includes student, vo-ag teacher, and counselor.) Guidance of student in selection of two occupations or professions he will work with.

48 periods—(40 hours)

Work with two employers a minimum of 20 hours each during class time and activity period, after school, or on Saturdays and holidays. Work time to be arranged by student with employer.

10 periods—

Written reports concerning experiences gained, interest in work, future ambitions, how student now feels about jobs experienced.

15 periods—

Summary of course. Writing job ap-

plications, employer interviews, how to enter and finance college, trade school, apprenticeship, etc.

The course is set up to operate only during the second semester each year, offers ½ unit of credit, and is open only to senior students (no senior vo-ag is offered). The course is taught during the vo-ag instructor's regular conference period, and enrollment is limited to those students who show a definite interest in some phase of nonfarm agricultural work.

After Two Years Experience

The course has been conducted in this manner for two years, with some changes being made.

One of the major keys to getting the course started has been the orientation of the employers as to the aims and objectives of the course. The employer is informed that while the student will not be fully trained in the limited time available, we do want him to experience as many facets of the nonfarm agricultural business as possible. The student will then be in the position to decide whether this is the type of work he would like to enter. As the student finishes his work experience, the employer is asked to fill out a check sheet on the student's interest and abilities and to make comments which might be helpful in the placement of the student. The cooperation received from local businessmen in this program has been outstanding. They seem to enjoy the association with the youth, and in many cases, it has been one of the

few contacts they have had with the public school. There is no pay involved in this training, as the course is strictly for experience and is part of the students' school work.

Our community has a number of agricultural nonfarm businesses for the students to choose from, and dur-

ing the past two years the students have worked with the veterinarian, elevator manager, feed mill, machinery dealers and mechanics, Soil Conservation Service, sales barn, greenhouse, local newspaper, and others. A number of the students have either taken jobs or are preparing for jobs

in occupations they experienced.

This type of course could be tailored to fit many communities where a number of nonfarm agricultural businesses exist. The progress made in our two years experimenting with this type of program has been quite satisfactory in our school system. □

Teaching For Better Land Use

KEMBLE H. TELLEFSON, Teacher of Vocational Agriculture, Hermiston, Oregon



The need for teaching the practical aspects of soil and water conservation in the United States has been important for many decades. In Umatilla County, Oregon, in 1951 a trial program was planned in cooperation with the local personnel of the Soil Conservation Service at Hermiston for the benefit of seniors enrolled in vocational agriculture at Hermiston High School.

The West Umatilla Soil Conservation District and the Soil Conservation Service have been of great value, during the past 12 years, in promoting a better understanding of the problems of soil and water conservation and in developing soil and water management practices as well as total farm planning and management. Soil and water conservation and management, whether on irrigated or on nonirrigated land, are involved in land use and field layout planning. The writer has observed that most farms in this area have been totally reorganized in order to properly use the practices necessary to promote efficient and effective conservation and management of these two basic resources, soil and water.

Conservationists Help

Class instruction in land use planning requires from one to two weeks of well planned group activities. The Area Conservationist of the local Soil Conservation Service starts this program each year by spending one class period orienting the class in the use of soil maps and topography maps, as well as the philosophy back of developing a farm plan based on the farmer's intentions relative to the type of farming program he plans to develop or improve.

Arrangements are made with the

school attendance office for the Area Conservationist to take the students in groups of two or three, each group spending a half day on the farm with the farmer. Farms visited are those recently signed up with the soil conservation district to be planned for better land use. Class time is then devoted to developing the farmer's farm plan, as the regular farm planning personnel of the Soil Conservation Service would do, until completed. This part of the instructional program may vary in length, depending upon the size and type of farm, the extent that it will be reorganized, and the problems of soil and water conservation that must be solved by planning appropriate practices. At the conclusion of this farm planning experience, the Area Conservationist spends one class period reviewing the total process with the class and observing each individual student's work.

Preliminary preparation for this fourth year instruction in conservation farm planning starts with basic instruction during the second year of vocational agriculture in soil origin, soil physics, soil chemistry, soil testing, plant food elements, and the application of fertilizers. This is followed up during the third year with the aspects of soil management including soil surveys, land use capability classifications, geology of local soils, soil judging, land leveling and use of the farm level transit, water use and management (both on irrigated and nonirrigated farms), and the organization and operation of soil conservation districts.

Farm Selection and Appraisal

The follow-up of land use planning is the study of farm selection

and appraisal. The bulk of the remainder of the fourth year is devoted to the various aspects of farm business management.

This cooperative plan has proven most effective in teaching soil, water, and land use management as well as effective introduction to teaching farm business management. It has proven to be valuable instruction for all agricultural students, regardless of their future occupations, whether they will become farmers, will become employed in related agricultural occupations, or employed in professional agricultural work. A survey of former agricultural students, which was completed one year ago, indicates that the great majority of respondents feel that all phases of the area of farm management are more important than any other single area of instruction taught in vocational agriculture at Hermiston. □

From Former Issues

An article by Alfred H. Krebs in the May, 1953 issue raised this question: "Another aspect of the present FFA program which should be examined is that of the many contests in which boys are asked to participate. Teachers of vocational agriculture are probably more "vocal" concerning contests than about any other phase of FFA activities. A brief survey of the great number of contests makes it difficult to deny the accusation of many teachers that we are getting "contest happy." These contests need to be evaluated carefully in terms of the contribution they make toward the eventual establishment of boys in farming. Those contests which make no contribution to this goal should be eliminated, and many others should receive reduced emphasis."

News and Views of the Profession

Lewis New Maryland Supervisor

Following the retirement of H. M. McDonald, September 1, Glenn W. Lewis became the State Supervisor of Vocational Agriculture of Maryland. Mr. Lewis, a native of Maryland, received his Bachelor of Science degree in horticulture from the University of Maryland in 1938 and a year later, received a vocational agriculture teaching certificate. The Master of Science degree in agricultural education was conferred upon Mr. Lewis in January, 1954.

Mr. Lewis became the State Executive F.F.A. Secretary in 1961, after a successful career of teaching vocational agriculture. Mr. Lewis has written several articles and publications throughout his teaching career.

Cullen Becomes F.F.A. Executive Secretary

Ernest T. Cullen has assumed the position of State Executive Secretary Maryland F.F.A. vacated by Glen W. Lewis. Mr. Cullen completed his bachelors degree in agricultural education at the University of Maryland in 1950. During the past year Mr. Cullen was in graduate study as a recipient of one of the first National Future Farmers of America Fellowships. In addition to his vocational agriculture teaching, Mr. Cullen has served as guidance counselor at Wicomico Senior High School.

Mr. Cullen was awarded the Honorary American Farmer Degree by the National Future Farmers of America. He is past president of the Maryland Vocational Agriculture Teachers' Association.

Homer F. Gibson, 62, District Supervisor of Vocational Agriculture, died suddenly of a heart attack in Auburn, Alabama on September 22. Mr. Gibson began his teaching career in 1923. During the past 25 years, Mr. Gibson had been Supervisor of Vocational Agriculture teachers in 13 Northwestern Alabama counties. Mr. Gibson had recently been honored for 40 years in service to Vocational Agriculture.



Arthur Floyd Sr. who served many years as Special Supervisor of Vocational Agriculture Education in Alabama and Teacher Trainer in Agriculture Education at Tuskegee University, died in Tuskegee on August 22. Mr. Floyd began his career in Vocational Agriculture in 1920. He assisted in organizing the National NFA Organization in 1935 and sponsored the first national meeting. Professor Floyd will be remembered as a frequent contributor to the *Agricultural Education Magazine*.



North Carolina Staff Changes

Three members of the Vocational Agriculture Staff in North Carolina are currently on leaves-of-absence working toward doctorate degrees. Dewey A. Adams is at the University of Florida, Charles I. Jones at Florida State University and J. W. Warren, Jr. at the Ohio State University. In addition, Joe R. Clary has just rejoined the staff after a year's leave to complete course work for the doctorate from The Ohio State University.

Charles H. Rogers, has recently rejoined the staff after a leave-of-absence completing the course work in his doctoral program at Cornell University. Dr. C. Douglas Bryant completed his dissertation and received his doctorate from Michigan State University recently.

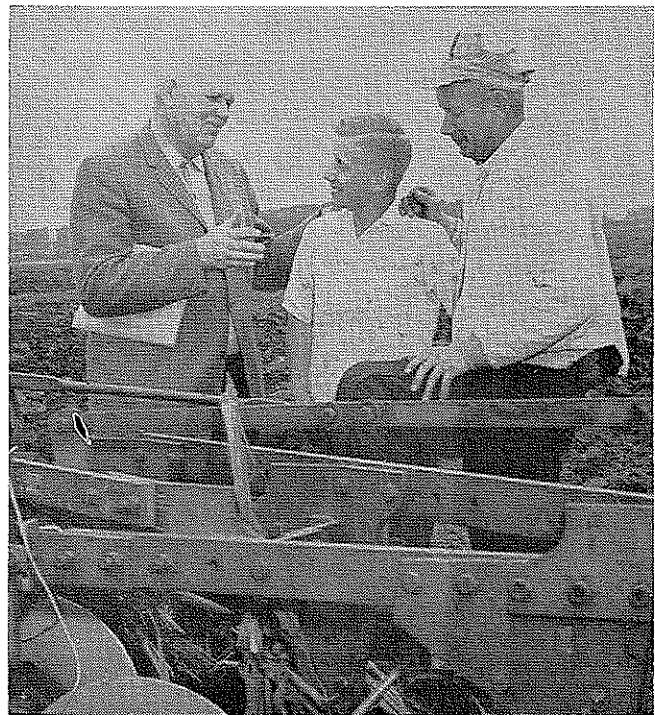
Mr. Earl M. Price, former teacher of vocational agriculture

in North Carolina joined the Vocational Agriculture Supervisors Staff in North Carolina on September 1, 1963. Mr. Price is a graduate of Mars Hill College, Appalachian State Teachers College and North Carolina State College. He has recently been appointed as a trustee of the Gaston Community College.

Robert N. Craig, aged 50, died of a heart attack in Bryan, Texas, on August 18. A veteran of World War II, Mr. Craig was a retired Lt. Colonel in the army reserves.

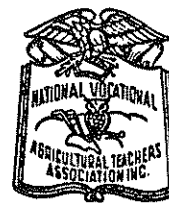
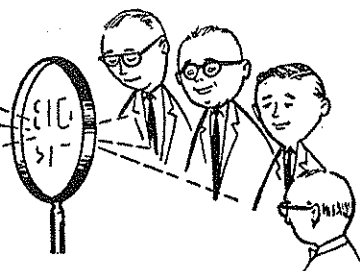
He was co-author of the farm shop manual "Modern Farm Shop." In 1959 he became coordinator of the Agricultural Adult Specialist Program. During this time, his office has conducted special courses for approximately 95 percent of the vocational agriculture teachers of Texas. Due to his efforts, more than 300 schools in Texas were able to set up more effective farm shop programs. □

"The great end of life is not knowledge but action." Thomas Huxley.



Here is a story of vocational agriculture—past, present, and future—Ray S. Bundy (left), who has more than 40 years of teaching experience, counsels with a vocational agriculture student, James Schnelle, Jr., who represents the future of agriculture. Looking on is Mr. Schnelle, Sr., a fully established farmer of the present, who is a former president of the Rensselaer, Indiana adult farmer class. Mr. Bundy has taught at Rensselaer for more than 35 years, and is widely recognized for his successful work with his adult classes.

BOOK REVIEWS



N.V.A.T.A.
News

James Wall
Executive
Secretary

ANTIBIOTICS IN AGRICULTURE.

Woodbine, Malcolm, Editor, Butterworth and Company, London, England. 1962. pp. xi + 439. Price \$14.95.

This is a collection of papers presented at the Second International Conference on Antibiotics in Agriculture which was held in April 1962.

While much of the material will be beyond the interest of teachers of vocational agriculture, some will find this book challenging in terms of basic research in the field of antibiotics and the potential uses of these materials. As an illustration, one of the papers reports the use of antibiotics in the control of diseases on ornamentals, such as roses. On the other hand, some of the hazards of using antibiotics, including the development of resistant strains of disease producing organisms is emphasized in some of the papers.

As vocational agriculture programs expand into areas of training technicians, this book may find an important place in libraries of such departments.

Raymond M. Clark
Agricultural Education
Michigan State University

AN INTRODUCTION TO SOIL SCIENCE IN THE SOUTHEAST, by Charles D. Welch and Gerald D. McCart. The University of North Carolina Press, Chapel Hill, North Carolina, 1963, pp. 280. Price \$3.50—Publication Date August 31, 1963.

The authors state, "This book is written with three objectives in mind: first, to provide subject matter material and a guide for a block of instruction in soil sciences for vocational agricultural students; second, to provide high school science students with suitable basic reference material on soils; and third, to provide adult farmer classes and fertilizer industry personnel with useful information."

Ten sections are included, Soil Formation and Development, Soil Classification and Land Use Evaluation, Soil Water, Plant Growth and

Nutrition, Soil Acidity and Liming, Lime, Soil Fertility and Fertilization, Fertilizers, Soil Testing, and Soil and Crop Records.

The book is particularly well written for use in programs of vocational agriculture. It should prove very worthwhile in the section of the country for which it is written and it will have much to offer for vocational agriculture personnel in other parts of the United States.

Raymond M. Clark
Agricultural Education
Michigan State University

THEORY AND PRACTICE OF SUPERVISION, by J. Minor Gwynn, Dodd, Mead and Company, New York, 1961, 473 pp., price \$6.75.

Professional workers in agricultural education (teachers, teacher educators, and state consultants) should find many helpful suggestions in this book. For example, the chapter on "Supervision of Student Activities" has implications for supervision of Future Farmers of America activities at the local, state, and national levels within the perspective of the total school program. The chapter on "Using the Workshop, Group Processes, and Action Research in Problem Solving" presents purposes, techniques, and practices in group processes as well as how workshops can be used by groups in solving problems. These and other chapters offer many useful ideas for persons engaged in agricultural education.

Dr. Gwynn, professor of education at the University of North Carolina, has experience in elementary and high school teaching and administration in addition to teaching career at the university level.

Don Meaders
Agricultural Education
Michigan State University

"Young men are fitter to invent than to judge, fitter for execution than for counsel, and fitter for new projects than for settled business." Francis Bacon.

Following are some of the major achievements of NVATA during the 1962-1963 fiscal year:

1. Thirty-eight associations, the largest number ever, reported 100% membership. Several other associations lacked from 1 to 5 members of being 100%.
2. The total membership (10,127) for 1962-63 surpassed the all-time high of 10,120 attained in 1959-60 when 390 members from Oklahoma were affiliated with NVATA. Oklahoma had only 13 members in 1962-63. Had their 1962-63 membership been equal to their 1959-60 membership the total NVATA membership for 1962-63 could have been 10,504. Compared to 1961-62, the 1962-63 NVATA active membership increased by 127, active life membership by 4 and student membership by 143.
3. Under the leadership of E. W. Crowley, Region V became the second region in NVATA history to be 100% in membership. In view of the fact that Region V has 15 associations with 2,859 members, this was a remarkable achievement. Region III, led by Verdine Rice, also attained 100% membership. All but 3 states in Region 1 and 2 in Region IV were 100%.
4. A continued increase in state association activity has been evidenced by more newsletters and communications with the membership at the state level; more associations with written programs of work; more associations reporting their activities to the national association; and, more associations sending delegates to the national convention and summer regional meetings.
5. Many members of NVATA have responded to requests for letters in support of new legislation for vocational education. Others have taken time to provide would be detractors of vocational agricultural education with "facts" they should know.

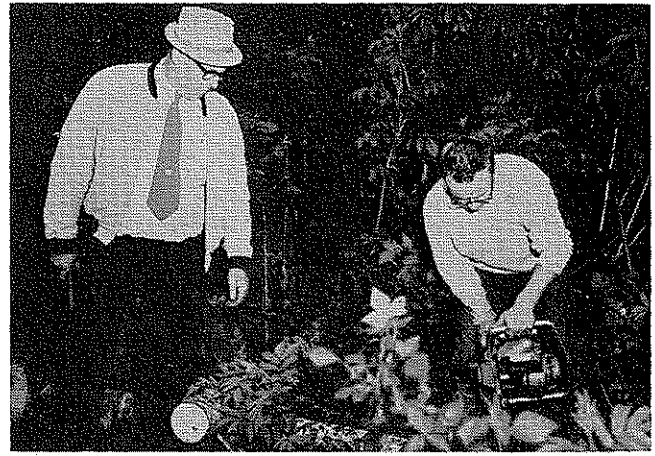
Stories in Pictures



Here is probably the only father-son combination of its type in the country. Harry Peirce, Sr., left, served as MVAIA president in 1935-36. Son Harry, Jr., named president elect by the 400-member organization during its annual convention on July 4th, will assume the duties of president for 1964-65. Mr. Peirce, Sr., started his teaching career in 1925. During his teaching career at Staples, Minnesota, Mr. Peirce developed an outstanding program of vocational agriculture, including many state and national FFA judging teams. Son Harry started teaching in 1950 and has been vocational agriculture instructor at Winona since 1953.



Louis Huffman, 28, of Powell, Ohio, his wife, Doris, and their two sons, Dan and Dale, play the starring roles in a newly-released movie called "The Businessman Farmer." Louis is a former American Farmer and Ohio Y.F.A. president. The movie, which tells how Louis has applied business management methods to his large-scale farming operations, was produced by farm equipment manufacturer Massey-Ferguson Inc. of Detroit. D. A. Coape-Arnold, company president, Ohio's Governor James A. Rhodes, Dean Roy Kottman of Ohio State University's College of Agriculture, and many prominent agricultural leaders attended the premiere of the movie which was held in Columbus, Ohio.



Advisor Bob Kerstetter, Wahkiakum High School, Cathlamet, Washington, watches a hard working FFA member, George Quigley, using the chapter owned chain saw to make fireplace wood. The chapter last year was given all the alder the boys could take out from land being cleared for their new high school. The chapter cleared over \$200.



Paul Miller, 17, (right) Woodstock, Connecticut holds a purebred Holstein heifer which was presented by the Sears-Roebuck Foundation in recognition of his being selected North Atlantic Regional Star State Farmer of the Future Farmers of America in connection with the 1963 Eastern States Exposition held recently in Springfield, Massachusetts. Paul and his mother operate a 128 acre dairy farm in partnership including a herd of 55 animals of which 32 are cows and 16 are heifers.



Mr. and Mrs. Bill E. Cox take a look at the Alpha Tau Alpha plaque which bears his name as "Agriculture Teacher of the Year." Mr. Cox, who teaches at Tempe, Arizona High School, was selected for this recognition by his fellow teachers who are ATA members. The plaque was presented by the Phi Chapter of ATA at the University of Arizona. Mrs. Cox is also a teacher. (Photo by R. W. Cline)