# NEWS TO ME

Dr. A. Webster Tenney, former National FFA Executive Secretary from 1943-1957 and National FFA Advisor from 1961 to 1965, has taken an assignment in Jamaica with the International Labor Office. He will work with five international experts from ILO to help develop vocational and technical education programs, development and supervision of preservice and inservice teacher education programs and work with business, industry and the Jamaican ministries of education and labor.

* * * * * *

The Kansas Agri-business Students Association will provide the staff for an exhibit at the Agricultural Career Show at the 1971 National FFA Convention in Kansas City. States have been requested to supply brochures by September 1 describing available post-secondary education agri-business courses. Encourage your delegates to visit the exhibit.

* * * * * *

We anticipate or remember but never are.

—W. H. Odden

* * * * * *

Agriculture has long served as a classroom example of pure competition. The industry is composed of millions of small firms.

—Earl O. Heady in
FARMERS IN THE MARKET ECONOMY.

* * * * * *

Few of us ever stop to think about how much food we eat in a year. You may find it hard to believe, yet each of us eats nearly three-quarters of a ton every 365 days! This amounts to nearly 3 tons a year for a family of four and a whopping 150 million tons to feed us all.

Donald D. Durost in
FOOD FOR US ALL.

* * * * * *

Despite all the research on creativity currently under way in many places, it does not appear likely that there will ever be a single, widely accepted test for creativity. What is more probable is that we will become much more sensitive to aspects of students and their environments that have previously been overlooked. Once the characteristics of creative people have been defined more clearly, research will probably place major emphasis on investigating those conditions or methods of instruction that increase the creative capabilities of students.

—Educational Testing Service
Annual Report, 1965.

* * * * * *

In 1950 a farmer had to have a gross income of $20,000 to net $8,000. Because of a combination of inflation and a diminishing margin of profit, the average farmer now needs a gross income of $48,000 to have the equivalent of $8,000 net income.

* * * * * *

G. T. Ward, McGill University, Montreal, Canada, speaking at the 1970 meeting of the American Society of Agricultural Engineers in Minneapolis, Minnesota, predicted a source of electricity in the future is from the collection of concentrated solar radiation with satellites in space and transmitting it to earth in high-density beams of selected wave lengths.

* * * * * *

There are no reports of individualized instruction programs (independent study, self-directed etc.) resulting in less achievement. Individualized instruction may not help — but it won't hurt, either.

—Report on Educational Research,
October 1970.

Feeding ground newspapers blended with molasses to farm animals may be one way to reduce their competition with man for cropland that supplies direct human needs. Scientists at Beltsville Experiment Station found that newsprint could replace 8 to 24 per cent of the roughage in a ration. It was part of a study to make ruminant animals more efficient users of materials that man can't eat and which may pose potential pollution problems. Newspaper may be good for the digestion — how about the circulation?

—Agricultural Research, February 1971

* * * * * *

Maybe it is time for ecologists and other well-meaning individuals to pause in their efforts to bring changes for environmental improvement to consider whether their actions could change our food balance from one of bountiful plenty to one of abject famine. Dr. N. C. Brady, Cornell University, estimated that all of the food stored in U.S. warehouses and government surplus storage would feed our population for only 90 days if all food production was stopped.

—Land O'Lakes Mirror, February 1971.

* * * * * *

Farmers are faced with the reality that today they must deal with city Congressmen who are not opposed to them but who are a lot more concerned with other matters. Only 85 of 435 seats in the House of Representatives are filled by individuals with more than 15% of their constituents living in rural areas.

Senator Ted Kennedy, in a most beautiful eulogy of his brother, asked that the late President be remembered simply as "A good and decent man, who saw wrong and tried to right it, saw suffering and tried to heal it, saw war and tried to stop it." He quoted his brother as saying, "Some men see things as they are and say why? I dream things that never were and say, why not?" What a wonderful world this would be if we each adopted this philosophy.

AGRICULTURAL EDUCATION

# Agricultural Education

olume 44 September, 1971 Number 3

Featuring —

INSTRUCTIONAL MATERIALS

The
# Agricultural Education
Magazine

EDPRESS

Vol. 44 September, 1971 No. 3

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## COVER PHOTO

Franklin Jackson (left) and Richard Hofstrand, doctoral students, University of Illinois at Urbana, examine instructional materials displayed at the Illinois Agricultural Occupations Teachers' Conference held at the University of Illinois in August, 1971. (Photo by David Cattron, Graduate student, University of Illinois)





GUEST EDITORIAL

# INSTRUCTIONAL MATERIALS

*Lloyd P. Jacks, Associate Professor and Head, Agricultural Education, Murray State University, Murray, Kentucky*

Vocational education in agriculture has been an integral part of public education for more than half-a-century. Throughout this period teachers in that discipline have been confronted with a multitude of complex, frustrating problems influencing both teaching and learning.

One of their greatest problems has been that of determining what the local instructional program should be. Evolving from this is one of the most baffling problems in education: What to teach — what learnings are most desirable, of the most worth. And this involves, among other things, selecting, procuring, and effectively using adequate instructional media.

Teachers over the years have voiced their desire for some systematic source of high quality teaching materials directly related to their curriculum objectives.

During the early years after vocational education became a reality, the Federal Board for Vocational Education attempted to help provide teachers with high quality reference materials, organized in a manner conductive to effective use in teaching — learning situations. The Board, however, found it impossible to produce all of the materials needed. Great emphasis was then placed upon teaching instructors to use the job analysis technique. This involved the teachers, and eventually their students, in analyzing each individual instructional job or unit into: (1) informational questions to be answered, (2) managerial decisions to be made, and (3) step-by-step procedure for putting the decisions into practice. The instructor was then to use this analysis technique in preparing what was to be taught, using whatever subject matter materials were available. Thus, during the early to fairly recent years many teachers have been largely responsible for preparing their own instructional materials.

Many educators have subscribed to the concept of teachers developing their own instructional materials, but this has been proved inefficient. The vast majority of them have had little training in developing such materials and have an inadequate background in the various subject matter areas involved in their instructional programs. Furthermore, they simply have neither the time nor adequate basic references necessary for preparing such materials.

With the passage of the 1963 and 1968 Vocational Education Acts, the stage was set for effecting great improvements in providing vocational educators with sorely needed materials of instruction. Curriculum material laboratories have been expanded in many states having them prior to the enactment of these laws. And currently there is an ever-increasing number of such labs being established in those states where none previously existed.

Various sources other than state curriculum material laboratories have also provided instructional materials for those of this discipline. For example, the National Center for Vocational and Technical Education renders a valuable service through its provision of a national system of information retrieval, storage and dissemination of such materials. Examples of commercial and similar groups producing such materials are: (1) the American Association of Vocational Instructional Materials that produces a wide variety of materials of superior merit in engineering technology, and (2) The Portland Cement Association that prepares high-quality materials in masonry technology. Materials of instruction provided by the state laboratories and groups such as the afore-mentioned consist primarily of printed subject matter references, filmstrips, overhead transparencies and similar materials.

Printed references currently being produced are of many kinds or types. But the current emphasis in many of these laboratories including the National Center apparently is on developing the *teacher-guide* type that are, in reality, more 'teacher-oricnted' than 'student oriented' despite claims to the contrary. Curriculum guides are fine and are sorely needed. But teachers and their students must also have ready access to an adequate quantity of high quality student-oriented subject matter materials that provide information basic to understanding and decision-making and the ability to effectively carry out the practice involved.

It is a truism that no teacher can teach beyond his own knowledge. But the extremely great variety of knowledge and understanding, and skills that teachers must possess in order to conduct good teaching programs presents an array of obstacles that almost prohibits accomplishment. To effectively train today's agriculturists, the vo-ag teacher must know the animal and plant sciences, the mechanical and economic aspects of farming, and the occupational requirements of nonfarm ag-related pursuits.

Add to this the special educational methods and techniques that he must master and his occupational task becomes even more formidable. Thus it becomes evident that the teacher must rely upon instructional and reference materials and that such materials must be designed to meet his needs. Likewise, they must meet the needs of their students because vo-ag teachers are in reality leaders of students in their quest for knowledge. To design materials to meet the above-stated demands is by no means a small task. Therefore, the writer maintains: (1) that teachers both want and need good teacher guides that include suggested problems or learnings to be developed, and that (2) they also want and need high quality 'student-oriented' subject matter materials. Without adequate up-to-date 'student-oriented' subject matter materials teacher guides will be of little value in teaching-learning situations.

# PERFORMANCE OBJECTIVES – MIRACLE OR MIRAGE

*Billy J. Vice*
*Assistant Professor*
*University of Kentucky*
*Department of Agricultural Education*
*Lexington, Kentucky*

Stating objectives in behavioral or performance terms is in vogue in educational circles today. The reasons for doing so seem to be based more on sound evaluation assumptions than sound educational principles of developing valid outcomes.

Due to the risk of misinterpretation of personal convictions, a few basic premises will be listed. *First,* objectives should be stated — based on the needs, interests, experiences, functioning ability, and desired changes of individuals to be served. Differences in individuals imply valid objectives can focus only on one person, but the behavioristic approach suggests conformity or an environmental viewpoint. *Second,* evaluative criteria should be determined at the same time the objectives are identified. However, measurement limited to observable outcomes may be only indicators of results expected rather than the "true" end results. *Third,* behavior can and should be more than overt response, such as skills. For persons in vocational education, the ultimate behavior can only be assessed through on-the-job performance; yet, most concern in writing behavior objectives seems to be for classroom situations rather than in occupational situations. *Fourth,* objective thinking and objective evaluation of educational outcomes are critical for developing a more scientific basis for teaching-learning. If we let measurement become the major criterion for deciding the intended results and what one should learn, there is a possibility of concentrating upon the insignificant. *Fifth,* individualized education is an ideal. Only when decisions about objectives and how to attain them are based upon the individual characteristics of students can this ideal be attained. However, most performance objectives are measured by a group standard performance. This implies societal results rather than individual needs are the bases for major outcomes. *Sixth,* quality of learning does not have to be inversely related to the amount learned or to the development of appropriate response to unique future problematic situations. The domains of learning allow the hypothesis that learning has many dimensions and that all of them could be related. It may well be that the dimension of learning which is most susceptible to behavioral quantification is of least importance. *Seventh,* behavioral objectives have made a contribution to the educational process. Purposefulness must exist, but the system must be goal-directed as well as goal-oriented. Goals themselves must create information which is used to direct the behavior of the system. Still snapshots can never portray information that can be provided by a "motion picture" methodology.

## Miracle for Evaluation

Some educators suggest behavioral objectives as the end of the ends. Some critics could agree with this idea but with a slightly different interpretation. Extreme critics declare such an approach is an end to creative institutions such as teacher education itself. Paradoxical as it may seem both views seem to be based on the same assumptions. Both views tend to agree that objectives should be stated in terms of changes in people to be served rather than in terms of the change agent.

The criterion of the degree of specificity has long been an issue in defining objectives. Assuming performance to be the ultimate end of learning, behavioral objectives tend to be very specific. The results of such an approach to identifying objectives are statements which, 1) specify what the student is to do, 2) under what circumstances, and 3) to what level of proficiency in measurable and observable terms. The statement has an action verb to specify behavior of the student and indicates the conditions and standards of performance associated with the behavior.

Perhaps the major advantage attributed to behavioral objectives is that they facilitate evaluation. The basic rationale for this premise is that congruence of the intended ends vis-a-vis actual ends measures success. This requires identifying the desired outcomes of the instructional process before designing the ways and means. Essentially, a behavioral objective has "built in" evaluation (planned evaluation), but this does not assure one of actual evaluation or of the validity of the evaluative criteria. Knowing where one is going and knowing where one should go may be two different types of decisions. Measurement is only a part of evaluation.

Another advantage attributed to performance objectives is that they deal with the ends of the educational process. What is the real end of teaching-learning? When is the end reached? The behavioral approach suggests immediate ends. If this is so, vocational educators need to define gainful employment and specify what it means at each stage of preparation or not always state this vague concept as an objective. From a learning viewpoint, this implies that actual doing or use of knowledge is the only result of learning. Does this mean skills take precedence over knowledge and personal characteristics? At best, performance is an approach to evaluation. Through this approach, the vocational teacher can be held accountable for what he promises in his objective. However, the objective of the teacher for a student and the objective of the student for himself may be very differently evaluated.

## Mirage for Planning

Should objectives be more for planning or a measure of quality control? Planning can be for long or short range. Objectives can be idealistic or realistic. Behavioral or performance objectives are a realistic approach.

Planning should never be based on the assumption that reaching merely quantifiable goals is more important than the quality of the educational product. Defining how to measure results should be secondary to results desired. Although evaluation of outcomes should be considered at the same time one decides what to teach, too much of even a good thing is possible. If the only purpose of stating objectives is evaluation, performance objectives are ideal starting points. However, all perposes for writing objectives must be considered in deciding on a system to develop them. What really are the purposes of having objectives, where should the cues for them come from, and what factors should be considered in developing the best system to accomplish the task? A system for writing objectives only helps make decisions; it does not make them for us. A system that can reduce complex behavior to an action verb is a pretty simple one. Conditions and level of performance seem more important in the system than behavioral changes.

Perhaps the main weakness of performance objectives is that relationships between outcomes are not recognized. Rather than a continuum, a hierarchy, and major-minor combinations, all objectives tend to be reduced to the same level. Attention to detail is undoubtedly one key to teaching success, but the details must be related to larger, more idealistic outcomes. Insignificant and low levels of learning could be the product of such an approach. The higher mental processes of evaluation, synthesis, analysis, and organization may not be stressed and all domains of learning may not be emphasized. Based on my observations, many "behavioral" objectives have not improved teaching plans made by a teacher, assuming he already had objectives before using them.

Educational objectives should serve more than as a standard of student performance. Objectives provide criteria by which content is selected, materials developed, and instructional procedures are outlined. Evaluation itself is a means to an end rather than an end in itself, and it needs to be a continuous process rather than a backward orientation. Looking at objectives from a planning view, both a beginning point and ending point are needed — both idealistic and realistic dimensions. Schools may be assessed based on outcomes such as reading ability of its students, but students themselves are probably more critical of methods and content used to teach reading. Perhaps the reason for poor reading by many students is not the lack of a very explicit objective for reading level, but the fact that alternative appoaches to teaching them have been limited. Planning eventually requires some type of design looking at the interaction of the ideals and the realities of the situation.

## Reaching — Teaching

Theoretically at least, one difference in the vocational approach to educating students is the use of inductive techniques such as occupational experience in addition to abstract deductions. However, the fact that both inductive and deductive approaches recognize particular and general components of the educational process allow the hypothesis that similar results are desired. The best method in use, the scientific one, utilizes both approaches as it weaves back and forth between theory and the real situation. Performance or behavioral objectives tend to be more particular than general, so both specific ends and means may not allow us to reach the general means-ends at any time. Validation of concepts must be assured, but the more complex the desired outcomes the less the chance to validate them in the real world.

Evaluation must be a function of good teaching, but its purpose in education should be considered primarily as a diagnostic one. Performance of a student is only part of the educational process. Desirable learning can be simply setting goals as well as reaching them. Let us not assume that good teaching only results in students reaching "ends." Evaluation is not a miracle drug for effective learning just as idealistic planning is not always a mirage that cannot be attained. Based on evidence about their needs, abilities and interests, educational performers cannot be reduced to a simple static system of ends in themselves. Perhaps we need to design a moving picture methodology of the educational process, because it seems to have a lot of still pictures that are impossible to fit into a functional system.

# TESTING FOR PSYCHO — MOTOR LEARNING

*Frederick K. T. Tom*
*Agricultural Education Division*
*Cornell University*
*Ithaca, New York*

Teaching may be defined as the process of bringing about three types of changes in people: namely, cognitive, psycho-motor, and affective. We should be concerned with testing for the achievement of all three types of changes. We have developed great skill in testing for cognitive outcomes and have sadly neglected the remaining two.

What is psycho-motor learning? The definition I like is that such learning involves both mental (psycho-) and muscular (motor) activity. Welding, making corsages, operating a chain saw, plowing, typing, and adjusting spark plugs are common examples of psycho-motor activities. One can look at any course of study in agriculture and be impressed with the amount of time teachers spend on developing psycho-motor skills. We may argue as to which is more important in vocational agriculture, cognitive or psycho-motor learning, overlooking affective learning for the moment, when we regularly test for cognitive outcomes and not for psycho-motor ones, we unavoidably downplay the importance of the latter.

What has contributed to our neglect of this aspect of our profession? A quick answer suggests itself. It has simply been difficult to test for psycho-motor learning. For example, much of this type of learning can be tested only in an individual situation requiring not only the attention of the teacher but also the provision of necessary equipment and supplies. The testing of a student's ability to fell a tree properly is a case in point. The instructor should be present, necessary equipment must be provided, a suitable woodlot must be located. The same situation arises if one were testing students for their ability to ball nursery stock, dehorn a calf, time an engine, operate a bull-

dozer, make a corsage. And if the test situation requires the teacher's presence, the teacher is faced with the necessity of seeing that other members of the class are adequately supervised. Yes, we can find many reasons why psycho-motor testing has not been practiced more extensively!

Because it has been inherently difficult to test for psycho-motor learning, we have committed the common fault exemplified in the following situation. A teacher correctly begins a unit by asserting that one of his teaching objectives is to develop in his students the ability to regrind worn drills in accordance with acceptable industry standards. He conducts a good lesson, and at its conclusion, administers an examination containing the question: Describe how you should regrind a worn drill. The reader can see that this item measures a student's ability to *describe* how to do the job. Such a question is, therefore, invalid for the objective listed. It could be valid only on the assumption that being able to *describe* a process is the same as being able to *execute* the process, and most of us are not willing to make such an assumption.

What constitutes a valid test for psycho-motor learning? A basic requirement is that the learner should engage in the psycho-motor activity in question. Thus in the lesson on regrinding drills discussed above, the test situation should include the opportunity for the learner to regrind at least one worn drill.

What should we look for as a student undergoes his psyco-motor testing? First, we observe the *procedures* he uses. Did he follow safe practices? Were his steps in the proper sequence? Did he overlook any step? Did he perform any step he should not have? Second, we note his *speed*. What was his productivity? Third, we evaluate the *quality* of his finished product. Does it conform to acceptable standards? Under ideal conditions, the teacher would want to consider all three factors assigning to each its prorated value as he determines them to be.

This is what Robert E. Norton, Assistant Professor in the Department of Vocational Teacher Education at the University of Arkansas did in determining how well his students could regrind worn drills. Of the three factors, *procedures, speed,* and *quality,* he decided to emphasize quality. At the end of the lesson, to provide each student with a test drill of equal difficulty, he reground a number of them to proper specifications and then purposely damaged each by blunting both cutting edges and the chisel edge approximately 1/16th of an inch. He asked each student to regrind one drill according to given specifications. Then he proceeded to determine the quality of each boy's drill. Points were earned for proper lip lengths, lip angles, and lip clearance angles.

In summary, although we vocational teachers are concerned with three types of learning outcomes, for the most part we have sadly neglected testing the degree to which we have brought about psycho-motor learning. Although many obstacles prevent our carrying out testing activities in this area of learning, we should direct our talents toward improving our ability to test for this desired outcome.

# LIVING MATERIALS FOR CONSERVATION AND NATURAL RESOURCE INSTRUCTION

*W. J. Kortesmaki, Minnesota Department of Education*
*Vocational Program Supervisor of*
*Leadership Training and Youth Development*
*and State FFA Executive Secretary*

### Year 1934

Minnesota FFAers have been doing their own thing in improving natural resources since 1934. The chapter delegates in attendance that year at their state convention resolved that "FFA should promote the conservation of natural resources and wildlife." The conservation projects for the next 30 years were conducted on a 'do it yourself' basis with individual members doing what comes naturally with help from the local conservation minded chapter adviser.

### Year 1964

In 1964, Minnesota FFAers launched statewide wildlife conservation programs with the help of representatives from the State Natural Resources Department, U.S. Bureau of Sports Fisheries and Wildlife, local sportsman's clubs and privately operated game farms. Meetings involving representatives from these groups were held to develop the raising and releasing of water fowl and game bird projects into a statewide FFA program. The resulting seven purposes of the FFA involvement were formulated at these meetings. The seven objectives in order of importance were:

1. To assist in introducing the study of conservation into the vocational agriculture high school curriculum;
2. To provide career opportunities for FFA members interested in wildlife conservation;
3. To make members and parents conservation-minded;
4. Provide an opportunity to make future landowners (FFA'ers) more aware of wildlife habitat;
5. Provide a common ground for game and fish personnel to work with youth;
6. To improve relationships between farmers and city hunters; and
7. To attempt to increase wild fowl and game bird populations.



### Concern for Our Natural Resources

The growing concern for our environment and natural resources helped to attract 145 local sportsmen's, conservation, cooperatives, fraternal, service, civic, social, business and farm organizations to cooperate with Minnesota FFA'ers on their experimental wild mallard duck and ring neck pheasant raising and releasing programs. The 1963 and 1968 Vocational Acts alerted many of the local and state vo-ag FFA personnel that conservation education is part of the vocational agriculture curriculum. During the past year the U.S. Office of Education's emphasis on agri-business and natural resources occupations and the National FFA's "Building our American Communities" (BOAC), are helping the FFA adviser and members in promoting greater interest in natural resources occupations.

### Five Separate Booklets

The blow by blow account of Minnesota FFA's involvement in renewable natural resources are found in the five recently published booklets entitled:

FFA Mallard Release Program
Pheasant Release Program of the FFA
Wildlife Conservation Programs of FFA (Summary of the 4 booklets)
Wildlife Habitat Program of the FFA
Wildlife Guide for Advisers and Members

A copy of each of these five publications has been mailed to all State Departments of Education and University Agricultural Education offices.

### Pheasants

Minnesota FFA chapters engaged in pheasant raising and release projects as early as 1954, but widespread interest in the program did not develop until 1964.

Several chapters banded their pheasants before releasing them into the wild in order to determine if they were contributing to fall hunting success.

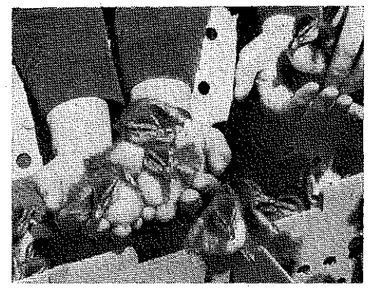
Results of the 1965-1971 pheasant raising program show that over 150,000 day-old chicks were received by Minnesota FFA chapters and about 115,000 (76 percent) of these were successfully raised and released into the wild at an age of seven to eight weeks. Most of the day-old chicks were supplied by the Minnesota Division of Game and Fish at no cost to the FFA chapters.

From 1965 to 1971, 185 chapters were involved in the statewide pheasant program and over 2000 FFA members actually raised and released young pheasants.

### Ducks

Statistical results for the 1963-1971 mallard raising program show that about 80,000 day-old ducklings were received by Minnesota FFA chapters and that approximately 66,400 (80 percent) of these were released into the wild at five weeks of age.

The McGraw Wildlife Foundation, Dundee, Illinois, transported newly hatched ducklings to the Minneapolis-St. Paul Airport via Northwest Airlines on staggered shipping dates in the months of May and June during each of the three years. Volunteer help by the Northwest Airlines Sportsmen's Club transferred the cardboard-crated ducklings to a holding area away from noise and climatic elements. FFA Chapter Advisers picked up the birds and transported them by auto-carrier to local distribution points where the chapter members secured their quotas and took them home to their rearing facilities.



One of the two genetic strains used was "McGraw fourth generation" mallards which were "pure" game farm stock from the McGraw Wildlife Foundation's game farm in Dundee, Illinois. The other strain was the "McGraw FFA" or "F$_3$" strain which is seven-eights wild genetically.

During 1965-1970, 71 chapters were involved in the statewide mallard release program, including 37 chapters which participated every year. A total of over 2000 FFA members actually raised mallards out of 5000 who expressed an interest in the program.

An intensive duck banding program was carried out by the Division of Game and Fish in conjunction with the FFA mallard raising program. During the 1965-1968 period, 13,772 FFA ducklings were banded, or about one-third of the birds released during each of these four years.

### Habitat

The habitat improvement project was launched formally in 1967, although some chapters had been working in this area during the earlier years of the mallard and pheasant projects. From 1967 to 1971, 93 different chapters and 1300 members participated in one or more specific habitat projects.

Minnesota FFAers plant over 900,000 tree seedlings each year. About 9 million seedlings have been planted during the past 10 years. Three chapters belong in the Million Group having planted a million or more tree seedings during the past 15 years.

Among the specific habitat projects, natural reproduction of game birds was aided by: planting and preserving nearly 10,000 acres of undisturbed nesting cover; delaying mowing of hay until after the pheasant nesting sea-

son; and building and erecting over 1000 wood duck nesting boxes.

The FFA members created waterfowl wetland areas by constructing impoundments; excavating dugouts; blasting open-water holes in heavily vegetated marshes; and protecting wetland areas from drainage, filling or burning.

A capsule look at other conservation environmental related vo-ag FFA activities includes the following:

This summer (1971) over 2000 FFA'ers served as amateur climatologists by providing rainfall data to officials of the U.S. Weather Bureau, the State Climatologist and the University of Minnesota Computer Center.

Thousands of FFA members volunteered to serve as foremen or supervisors of Arbor Day tree planting crews and anti-litter drives involving public and parochial elementary school students.

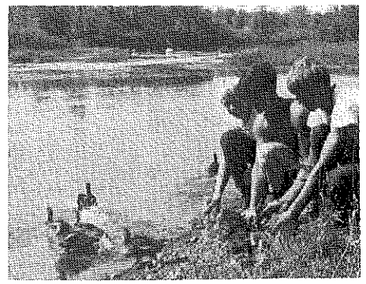
FFAers have constructed and erected thousands of wood duck boxes during the past 17 years. The boxes are made in Vo-Ag or home shops.

About 160 high school FFA chapters annually conduct community-wide safety campaigns in fire, gun, water, chemical, and snowmobile safety programs.

FFA chapters in 220 high schools are involving annually about 10,000 members in organized conservation programs such as reforestation, pollution prevention, improvement of wildlife habitat and planting of winter cover and food plots.

Chapters participated in screen planting of tree seedlings to hide highway eyesores, beautification of school grounds and other public lands.

In the spring of 1970, FFAers from 44 chapters released over 850 mature hen mallards. Over fifty-five percent of the released hens were sighted with wild drakes.



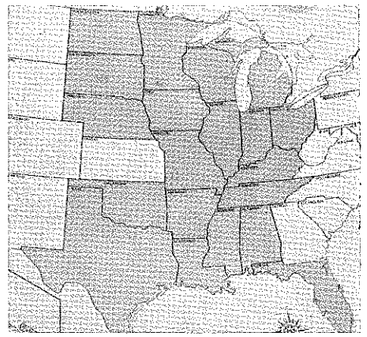
It was recommended that ducklings be released on the FFA member's home farm only if suitable habitat was available. In all cases the members were urged to consult their local area game official to plan the place and manner of release.

FFA members salvage each year over 1000 eggs from abandoned pheasant and duck nests and hatch them for releasing.

This summer over 200 wild turkeys were raised and released by FFAers in 12 chapters. This is the latest Wildlife Propagation Project of Minnesota FFAers.

The FFA members (girls and boys) are being attracted into wildlife conservation programs and are learning the importance of proper habitat to the survival of wild animals. A close relationship is being maintained between FFA members and advisors, civic groups, sportsmen's clubs and conservation officials that otherwise might not exist. Some contribution is being made to the natural mallard and ring neck populations and to the harvest of waterfowl and game birds by hunters, though the exact extent has not yet been determined.

We hope that the Minnesota FFAers duck-pheasant and habitat programs will attract and excite other FFAers to the timely enjoyment of contributing to the preservation of our exhaustible natural resources.



FFA birds distribute themselves throughout the flyways much the same as do wild birds. Band recoveries have been reported from a total of 20 states and 4 Canadian provinces.

## *HONORED BY WISCONSIN VOCATIONAL EDUCATORS*

Millard (Mick) Gundlach (left) and Don McDowell were honored for their work toward improvement in agriculture education throughout Wisconsin. Gundlach also has been named the Outstanding Vocational Agriculture Instructor for 1971 in the United States by the National Vocational Agriculture Teachers Association (NVATA) and has accepted the "Aggie" award during an awards banquet at Burbank, Calif., May 22.

Gundlach, of Montfort, Wisconsin, is young and adult farmer program supervisor for the Wisconsin Vocational, Technical and Adult Education District 3, headquartered at Fennimore, Wis. He is immediate past president of NVATA.

McDowell, former director of the Wisconsin Department of Agriculture, is a member of the National Vocational Education Advisory Committee and is executive director of the National F.F.A. Foundation sponsoring committee, Madison, Wisc.



# INSTRUCTIONAL MATERIALS FOR TEACHERS OF VOCATIONAL AGRICULTURE

*Herbert Bruce*
*Instructional Materials Laboratory*
*University of Kentucky*
*Lexington, Kentucky*

The teacher of vocational agriculture has many responsibilities, but first he is a teacher. A good teacher must have the abilities and qualities which will enable him to teach effectively. His teaching should be based on sound educational philosophy and should reflect good teaching methods. To teach effectively, he should have adequate instructional materials and use them correctly. However, no amount of instructional materials will make a poor teacher of agriculture into a good teacher if his fundamental ideas about teaching are wrong.

Instructional materials should be recognized as agencies which help the learner better understand what is being taught. There is little danger of instructional aids replacing the teacher.

### Use of Instructional Materials

There is the possibility of improving instruction and increasing the influence of good teachers far beyond our present imagination if teaching aids are properly selected and used.

There are several uses that one can make of instructional materials. A few of the uses are listed in this article. The writer does not attempt to list all that could be listed. Some important uses are to: a) stimulate interest, b) set goals, c) develop understandings, d) aid in solving problems, e) evaluate outcomes, f) help determine procedures, g) provide for individual differences, h) increase retention and speed of learning, and i) identify problems.

Once a teacher identifies uses to make of instructional materials, he is then in position to select the kind of materials to use.

### Kind of Materials

In selecting materials the teacher must keep in mind who will use the material—the student or the teacher, and how it is to be used. Some of the important kinds that can and are being used in vocational agriculture by teachers and students are:

a. Printed test and reference materials
b. Programmed instructional materials
c. Inexpensive supplementary materials
d. Graphic materials
e. Still pictures
f. Transparencies
g. Films
h. Recorded material
i. Real life materials
j. Displays, bulletin boards
k. Multi-media
l. Units, guides and course outlines

### People to Involve

Useful materials must be relevant. One way to have relevant material is to have a cooperative approach of competent people involved in its development. Local teachers, administrators, instructional materials specialists, representatives from business and industry, and content specialist from Colleges of Agriculture should be involved in working together to develop and provide usable materials. By using a team approach, research as well as the practical aspects of developing instructional materials will be useful.

Dr. Robert Warmbrod stated in an editorial in the May 1968 issue of the Agricultural Education Magazine, "the plea is simply this—that in the development and use of instructional materials we not confuse means with ends. The end sought is not to teach the content of an instructional material packet. Our first concern is the student and an effective approach to teaching and learning. Then the appropriate instructional materials are developed to enhance the teaching-learning process."

### Dissemination and Use of the Material

When materials are developed by and for a group of teachers, they should be properly disseminated. Probably the ideal way is for the material to be given to teachers in a group meeting and explanation on its use made at that time.

This kind of help may cause teachers to make some critical decisions as to using the materials. Every teacher should decide how to integrate the use of the material into his course of study, how to use the material in preparing to teach, and finally how to use it in teaching.

When this approach is used the teachers have an opportunity to react to the material. This kind of reaction leads to revising the material which should make it more usable for the students and teachers and provides a sound basis for evaluating the material.

### Evaluation

If instructional materials are to be of maximum value to teachers of agriculture, it is essential that they be evaluated in terms of the student and purpose for which they are intended.

Teachers of agriculture must see a need for using instructional materials to improve the teaching-learning process. In addition, they must select the right kind of materials for a particular purpose, involve competent people in developing relevant materials, properly disseminate materials developed, and evaluate them so that revisions and improvements can be made.

# TEACHING WITH TRANSPARENCIES

*B. H. Claxton*
*Vocational Agriculture Teacher*
*Jeff Davis High School*
*Hazelhurst, Georgia*

We are living in a period of time when change is very apparent. Teaching methods and approaches have changed considerably and will continue to do so. We are using means of presenting "mental set" material never used before.

The farm of yesterday consisting of a few acres of corn, half a dozen brood sows and perhaps a few steers has all but disappeared. These changes have made new demands on the vocational agriculture teacher. Teaching production agriculture has been supplemented with instruction in agricultural mechanics, off-farm agricultural occupations, ornamental horticulture and many other areas.

Because of this rapid change, if our students are to have access to vocational education that is purposeful, continuing, individualized, practical and attainable, the approach will have to be attained by a student centered course of study.

Last fall a group of teachers in Southeast Georgia met and discussed ways of formulating lesson plans to help teachers do a more effective job of teaching. A steering committee was appointed and a representative from the teacher training department of the University of Georgia was asked to serve as consultant. Areas of concern were listed and sub-committee chairmen were chosen.

Each teacher in the area was put on one of the 21-sub-committees according to his interests. Realizing that all jobs of the areas chosen could not be used, each committee chose to select the more pertinent jobs of the given enterprises to work with and were asked to make lesson plans which could be used in making transparencies for teaching.

The subject areas chosen were corn, FFA, forestry, swine production, small engines, organization of adult classes and advisory committees, soils, electricity, farm management, horticulture, tobacco, beef cattle improvement, arc and acetylene oxygen welding, dairying, concrete, cluster skills in farm mechanics, pulpwood harvesting, farm power and equipment, co-op education, permanent pasture, cotton and peanuts.

Audio-visual aids can help reduce the teacher's load and contribute to better, more worthwhile educational experiences for the student. The use of transparencies with an overhead projector may be considered as an extension of the chalkboard. Charts, drawings, definitions, and even a course outline which teachers use during the year can be preserved on acetate transparencies and used again and again. Materials can be added to the set of transparencies by adding a, b, c, etc. to the preceeding page number. For example, 7a, 7b, 7c, etc.

## TRANSPARENCIES

There are many ways by which one may obtain transparencies. You may create your own original or master and with a thermal copying machine make your transparencies. Or, you may purchase ready made transparencies from commercial firms. You should keep in mind, however, that the ready made transparencies are very expensive. Since this is a realtively new visual aid the scope of areas is very limited.

Things that lend themselves for overhead transparencies are those things which can be reduced to outline without much detail. Good examples are parts of animals, plants, electrical wiring, machinery, etc. Along with a transparency one can make use of an overlay, which is a sheet of acetate attached over the first sheet to more fully develop the point of interest.

*Preparing an Original Transparency.* (1) You need only a plain sheet of paper. (2) Use a graphite pencil or pen with black carbon-based ink. (The pencil should be at least a No. 2 graphite.) (3) For best results in typing, use the primary typewriter as the type is larger than either the pica or elite type. (4) You may draw your own transparency or secure the drawings of an artist, use illustrations from newspapers, magazines, etc. (5) In using pictures, clippings, etc. from books, magazine or papers when attaching to the printed originals try to use the tape equally across the paper, otherwise the copying machine will not pick up all of the printed material. (6) When possible, draw or ask someone to draw illustrations as the drawings produce a more accurate image on the finished transparency. (7) You may use an insert by cutting out a section of paper of the original and insert the drawing or picture into the slot. This is often done when the pictures or drawing are of thicker composition than normal paper thickness. (8) The use of pictures is important, but there must be distinct contrast of black and white for good image on the transparency. (9) For best results use only one central point per transparency. (10) Use overlays when possible. Overlay is simply attaching an additional acetate sheet over the base transparency to build a complete unit, step by step. Example: use a drawing of a simple wiring circuit transparency. Attach a second film on which you may draw the correct wiring procedure. Use scotch tape or some other more durable tape.

*Making a Transparency.* (1) Affix the printing dial on the copying machine to the recommended setting. (2) Secure the desired transparency film. (There are many types — clear, color, clear-color combination, etc.) (3) Place film over the original with the clipped corner to the right top.

*Mounting Transparencies.* (1) Mounting frames may be purchased or made from heavy-duty paper. (2) Attach transparency to frame so the film with the clipped corner will appear on the right top underneath the frame.

*Storing the Transparencies.* (1) Store with the thin sheets from the purchased film box between the mounted transparencies. (This prevents them from sticking.) Boxes for storing may be purchased. (2) Label boxes of the jobs contained.



# SIMULATION — EXPERIENCING REALITY

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Simulation can be used to analyze present systems and/or to design new ones, as in the development of a moon rocket or the design of a chemical plant. It is also used by educators to provide learning situations; specifically, to make the abstract real. When used in a management type setting, the simulator is modified to permit students to make business decisions at logical intervals. Results of decisions are calculated and the information is returned to the student. At this point the student has the opportunity to modify previous decisions and continue the cycle. When used in this manner, simulation is often called a game. "The term 'game' might suggest that the subject is narrow and frivolous, but this is far from the case."[1] Business games are the most common type employed, but career and school administration games are also widely used. The education of school administrators by the "in-basket" simulator is now a part of most college educational administration graduate programs. The Center for Research and Leadership Development in Vocational and Technical Education, at Ohio State University, recently published a simulation package for vocational administrators.[2]

Although simulation is not new, its application to high school teaching and to agricultural education came into favor within the last decade. This differs from Persons' contention that simulation is an old game in vocational agriculture.[3] From its early applications in military strategy, simulation moved to the colleges at the graduate and undergraduate levels, and now to the high school and elementary grades. Career games for guidance purposes have gained in popularity.[4] From this brief introduction, let us move into a discussion of some of the results of research at Pennsylvania State University. The models used were of a farm, agricultural supply or flower business firm.

Since 1967 the Department of Agricultural Education, Pennsylvania State University, has tested the effectiveness of alternative uses of simulation for management education in agriculture. To date our research has demonstrated that:

1. Simulation (gaming) is useful for teaching management concepts to high school and adult students in agriculture.
2. Student interest is high and remains high during the use of the gaming materials.
3. Team size, number of simulation decision periods, and type of data can be varied to fit the situation without sacrificing the motivational and educational value of simulation.
4. Model complexity did not adversely affect student learning at the levels tested.
5. Method of dissemination of instructional materials has a significant effort on subsequent student learning.

### Teaching management concepts to high school and adult students.

High school classes taught by the simulation methods scored as well on a subject-matter test as classes taught by the other methods.[5] With adult classes the use of simulation was also effective. In fact on a decision-ability test the adults with the simulation experience in addition to resource materials scored the highest.[6] Thus, in both the high school and adult classes, teachers of agriculture were successful in utilizing the simulation technique in their instructional package. With additional experience it could be expected that teachers might be even more successful.

### Student Motivation is High

"The enthusiasm and interest shown by students and the positive comments by teachers in whose classrooms the materials were presented was repeated in school after school."[7] If there is a universal conclusion about simulation, it is that it creates student interest. This has also been our experience. The challenge to teacher educators and teachers is to design effective means for harnessing this motivation for maximum results.

### Simulation is Flexible

In six high schools during 1967-68 school year, three ways of using simulation were studied. The factors were: (1) individual versus team participation in the simulation gaming exercise, (2) the number of simulation gaming exercises necessary for efficient learning, and (3) whether using actual data from a local farm is superior to using hypothetical data representing a small dairy farm.

There were no differences in student performance between those who worked in teams and those who prepared the decision forms as individuals. It should be pointed out that except for the decision-making sessions, the students all worked as individuals in the classroom.

In this experiment with relatively simple models the payoff for additional simulations beyond three was slight. Students learned the game in a trial run, then each experimental group had three or six decision periods. The number of decision periods needed for maximum learning probably depends on the complexity of the model.

Apparently hypothetical farm data is sufficiently real and interesting to the students that they learn equally as much from managing this farm as from managing the local farm situation simulated. This is an important finding because costs can be considerably reduced where a few model farms can be used rather than many.

### Model Complexity

How complex to make the simulation presents a significant problem. The greater the realism required, the more complex the model must be. In addition, the more complex the game the more costly it is to develop. Greenlaw cautions that "realism can easily be overdone to the point of obscuring in complexity and detail the selected principles the business game is designed to teach."[8] Stasulat, working at The Pennsylvania State University, compared three complexity levels of a farm supply store game.[9] Among other things he tested knowledge of management principles of students taught by the three complexity levels. Two conclusions might be drawn that: (1) that the most complex game is not too complex for high school students, or (2) that the least complex game provided satisfactory results.

### Dissemination of Stimulation Materials

Observing that innovations in teaching methods are often slowly adopted by teachers, Sargeant[10] experiments with methods of presenting simulation instructional materials to teachers. He concluded that instructional material development and dissemination should involve the teachers on an individual basis in their home schools. Thus, when teachers were directly contacted in their schools with the simulation materials, their students subsequently performed better on an achievement test. This phase of our research is fully reported by Sargeant[11] in the November 1970 issue of the *Agricultural Education Magazine*.

### Summary

There is now sufficient proof of value that teacher educators and supervisors in agricultural education can safely encourage the classroom use of simulation. Many areas in agricultural education lend themselves to this approach. The flower shop, farm supply, and farm game are only a few of many that could be developed. For the researchers, much effort needs to be expended on determining the most effective means for capitalizing on the high student motivation games create. For program planners and supervisors, personal instruction in the simulation technique seems necessary to give teachers the confidence to use it. And finally, simulation is not a panacea; it is a teaching tool that can help the student transform the abstract to the real.


1. Morton D. Davis, *Game Theory*. Basic Books, Inc., New York, 1970.
2. Richard F. Meckley, et al., *Simulation Training in Planning Vocational Education Programs and Facilities*, Research Series No. 52, VTO10 828, The Center for Vocational and Technical Education, The Ohio State University, 1970; and Dick G. Rice and Richard F. Meckley, *Supervision and Decision-Making Skills in Vocational Education*, Research Series No. 51, VTO10 277, The Center for Vocational and Technical Education, The Ohio State University, 1970.
3. Edgar A. Persons, "It's an Old Game in Vocational Agriculture" *American Vocational Journal*, September 1970.
4. Richard G. Johnson, "Simulation Techniques in Career Development," *American Vocational Journal*, September 1970, p. 30.
5. Samuel M. Curtis, "The Use of a Business Game for Teaching Farm Business Analysis to High School and Adult Students" *American Journal of Agricultural Economics*, Vol. 50, No. 4, (November 1968), p. 1029.
6. Curtis, p. 1032.
7. Johnson, p. 32.
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9. Joe J. Stasulat, *The Effects of Business Game Complexity and Computer Location on Student Learning, Occupational Interest and Attitude*. Thesis, the Pennsylvania State University, 1970.
10. Donald G. Sargeant, *An Experiment Evaluating Methods of Dissemination of Business Simulation Instructional Materials to Agriculture Teachers*. Thesis, The Pennsylvania State University, 1970.
11. Donald G. Sargeant, "Disseminating Instructional Materials", *Agricultural Education Magazine*, Vol. 43, No. 5, (November 1970).


# INSTRUCTIONAL RESOURCES IN AGRICULTURAL EDUCATION


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Teacher educators and state supervisors of agricultural education assume the leadership role within their respective states for generating and distributing instructional resources. A survey of eleven North Atlantic states disclosed some interesting data relative to the production and dissemination of instructional resources in agricultural education. In addition, teacher educators and state supervisors with major responsibilities for the distribution of instructional resources forecasted future needs for recorded thought devices in agricultural education. Results of the survey are described in terms of output, dissemination, and projections made.

### Output of Instructional Resources

The output of instructional resources was reviewed from four perspectives: (1) contributions by states, (2) categories of authors and creators, (3) kinds of materials, and (4) quality of materials. Output of instructional resources was limited in this survey to the materials published in multiple copies for general distribution to others.

The states with the larger, more diversified staffs were the ones with the greater outputs of instructional resources. Only when a sufficient number of state and other personnel have specific assignments for the production of instructional resources can an impact be made. It is apparent from the survey that the publication of instructional resources was not of top priority to either teacher educators or state supervisors.



A total of 153 authors or creators were utilized in the North Atlantic states to prepare ninety-five resources (See table 1). Almost one-half of the authors or creators were university staff members. Nearly one-third were graduate students of the universities. The states with the smaller staffs depended to a greater extent upon people from outside of agricultural education to author or create educational materials than did states with larger staffs. Teachers of agriculture, agricultural businessmen, undergraduate students and others were not being used except in small numbers to prepare instructional materials.

Because of advances in technology, the kinds of instructional resources which can be prepared are becoming more numerous. However, more than eighty per cent of the instructional resources available for distribution were of a conventional nature in that they were categorized as manuals, handbooks, guides, job sheets or worksheets (See table 2). The remainder of the output was classified as audio or visual devises other than the printed page.

The quality of the instructional resources was associated with field testing for effectiveness in teaching and learning. Presently, more instructional resources are being disseminated which were not tested than were tested for effectiveness in teaching and learning. Nearly eighty-two percent of the slide sets and two-thirds of the overhead transparencies were tested. Student oriented materials were not tested for effectiveness in learning as often as teacher oriented materials were tested for effectiveness in teaching. Field testing occurred most often when the originators were university staff and graduate students working together. The more costly the instructional resource was to reproduce in quantity, the more likely it was to be tested.

### Distribution Practices and Policies

The most common means of advertising the availability of newly developed materials was by memorandum. The "AVA Source Listings" and state newsletters ranked second and third respectively for advertising newly developed instructional resources. The states with the larger listings of publications and materials printed their own catalogs to publicize the availability of their offerings.

Mailing lists for the distribution of instructional resources were kept by eighty-three percent of the states surveyed. Almost ninety-one per cent of the states included teachers of agriculture on their mailing lists. One-third of the states had the names of head state supervisors in the nation on their mailing lists while slightly more than one-fourth included head teacher educators in the nation. Agri-businessmen were being included on mailing lists of more than one-fourth of the states. Advisory committee members were not receiving copies of instructional resources being produced and reproduced in their respective states.

Costs influence the numbers of instructional resources disseminated. The survey disclosed that (1) prices were reasonable, (2) single prices were just about the same as those for quantities, and (3) prices for low-cost resources differed little from in-state to out-of-state orders. Difference in cost between in-state and out-of-state orders was greatest for the more expensive materials. Sixteen percent of the materials were being disseminated free of charge. More than two-thirds of the materials were priced at less than fifty cents each.

The heaviest demand was not for student resources such as job sheets, worksheets, manuals, and workbooks; but rather for teachers' guides. There was no relationship evidenced between costs of materials and demands for them except for those few which cost $10.00 or more each. The demand for these more expensive items was rated "light."

Policy statements for distributing and updating instructional resources in agricultural education were few and not clearly written for any one state. The lack of structured policies for the distribution and updating of instructional resources would indicate that only the minimum activities are accomplished and then not at the expense of other assignments.

Table 1. Authors and Creators of 123 Instructional Resources in Agricultural Education Disseminated from the North Atlantic States.

| Authors or Creators | Number | Percentage |
|---|---|---|
| University Staff | 73 | 47.71 |
| Graduate Students | 47 | 30.72 |
| Teachers of Agriculture | 20 | 13.07 |
| State Department Personnel | 5 | 3.27 |
| Others — Agri-businessmen, School Principals, Undergraduate Students, etc. | 8 | 5.23 |
| TOTAL | 153* | 100.00 |

*The 153 authors or creators for the 123 instructional resources or 95 instructional packets reflect joint endeavors by two or more people for some of the materials.

Table 2. Percentage of Kinds of Instructional Resources in Agricultural Education Disseminated from the North Atlantic States.

| Kinds | Number | Percentage |
|---|---|---|
| Student's Manuals or Handbooks | 44 | 35.77 |
| Teacher's Guides | 43 | 34.96 |
| Sets of Job Sheets or Worksheets | 12 | 9.76 |
| Sets of 2"x2" Colored Slides | 11 | 8.94 |
| Sets of Overhead Transparencies | 3 | 2.44 |
| Others — Tests, Films, Tapes, Scripts, Mounts, Books, etc. | 10 | 8.13 |
| TOTAL | 123* | 100.00 |

*The 123 materials were disseminated as ninety-five instructional resources. Several kinds of instructional materials may be grouped to form an instructional unit or package.

### Projections

Teacher educators and state supervisors who were in charge of instructional resources for their own state were asked to anticipate the needs for the immediate future. They responded to the kinds of instructional resources needed, the occupational areas in agricultural education in most need of materials, and the approaches to teaching and learning in need of strengthening through instructional materials.

The kinds of instructional resources needed most are those which have not been produced and reproduced in the past. The need will be for (1) single concept films, (2) overhead transparencies and/or originals, and (3) demonstrations and experiments (See table 3).

Occupational areas in agricultural education in need of instructional resources are (1) agricultural supplies and services, (2) ornamental horticul-

Table 3. Kinds of Instructional Resources Needed in Agricultural Education for the North Atlantic States.

| Kinds of Instructional Resources | Rank* |
|---|---|
| Single Concept Film Loops | 1 |
| Overhead Transparencies and Originals | 2 |
| Demonstrations and Experiments | 3 |
| Slide Sets and Film Strips | 4 |
| Programmed Instructional Materials | 5 |
| Television Tapes | 6 |
| Audio Tapes | 7 |
| Workbooks and Manuals | 8 |
| Contests | 9 |

*Rank of 1 indicates the kind of instructional resource which is needed most. Rank of 9 indicates the kind of instructional resource which is needed least.

ture and floriculture, and (3) resources. Seventy-five percent of the priorities listed were in the occupational areas of agricultural resources and ornamental horticulture.

Needs for instructional resources relative to approaches to teaching and learning were seen greatest for supervised occupational experience. Needs were also great for the combined areas of guidance, counseling, placement and follow-up.

It was estimated from the titles for should be given priority that approximately three-fourths of the materials would tend toward agricultural skills and the remainder in the direction of other manpower matters such as human relations, human resources, and job orientation. Most of the titles listed appeared to lend themselves to the printed page for publication.

In conclusion, the production and distribution of instructional resources is proposed instructional resources which a continuous, full-time task not really being treated as such by any one state surveyed. This service to vocational education in agriculture has not been given its rightful place nor full emphasis by the leadership in either teacher education or state supervision simply because other educational activities have been given higher priorities and, in all probability, rightly so. The result is an unsystematic approach to making available some materials at infrequent intervals. Gaps and overlaps in the production of instructional resources occur and make for inefficiencies to both the users and the producers.

The question raised from the study is this. "Why not give consideration to the establishment of *Regional* Instructional Resource Centers with staff to promote and coordinate productional activities, to manage reproductional processes, and to advertise and distribute instructional resources more widely and, thereby, elevate this important educational service?" What has been good in the past can be made better in the future.

# TEST PLOTS AS TOOLS OF EDUCATION

*Kenneth P. Redmann, Sr.*
*Vo. Ag. Instructor*
*Pekin Community School*
*Packwood, Iowa*

All farm help between the ages of 14 and 16 must hold a certificate of tractor driver training before they can work for any farmer using these skills. This law, which concerns farmers, was passed in 1968. This requirement has been necessary because of accidents. If all vocational agriculture departments would have a number of acres of farm land where these young people could learn tractor driving skills, this law would be unnecessary. This is one advantage that a vocational agriculture department with land can pass on to a number of members in the community.

At Pekin the FFA Chapter farms 56 acres. Each year the chapter sows ten one acre plots of oats. This means we sow ten plots with ten different varieties of oats. The farmers of our area visit these plots each summer, and many of them decide, from information gained here, which variety of oats to grow next season. Farmers in the area may purchase a one acre plot of oats from the Chapter for their own seed for the next season. By purchasing seed oats from the Chapter, many farmers are able to obtain a new variety and good seed for themselves.

The chapter members also have an opportunity to study cropping practices firsthand because they perform these practices on the test plots. Some of these practices are plow adjustment, plowing, controlling a tractor during the plowing operation, disking, harrowing, spraying, seed bed preparation, herbicide and insecticide selection and use, cultivation, and harvesting skills. These experiences are available to all of the Chapter members. Test plots give an opportunity to teach these skills by doing. The test plots also give Chapter members a chance to do such things as run tests on fertilizer levels, vary corn and bean planting dates and see minimum tillage and seed population effects without an investment of their own. This pattern of action follows part of the FFA motto of learning by doing. Adults and students alike observe and follow many of the practices developed by FFA members on these test plots.

The test plots also provide a source of income for our Chapter. With this income our Chapter can have a chili supper for eighth grade prospective vo-ag students and a Chapter banquet. The Chapter does not have to resort to selling a number of small items of merchandise in the community to raise funds. Besides raising funds the Chapter members learn how to develop farm records by figuring cost analysis on each plot. Each year the Chapter submits a summary of the year's operations to the school board and proposes a budget for the next year. This is a practice tool for teaching boys about records and record keeping. This tool makes teaching a great deal easier and holds the students' interest better.

Public relations are greatly increased when a vocational agriculture teacher has a good variety of crops to demonstrate to the community. Farmers are interested in new crops and farming methods, and they will visit the plots and discuss farm problems with the agriculture teacher. Visits to the plots demonstrate to the farmers that a teacher has many of the same problems they have, and farmers will discuss these problems freely with the teacher. Discussion of these problems will many times take the place of a farm visit. This saves time and the cost of mileage for the teacher. At Pekin I have experienced as many as 20 farmers in a day stopping to look at the plots. The Adult Farmer program spends two meetings each year discussing and summarizing the findings of these plots.

The cost of any land investment for test plots is very small when one seriously considers the learning experiences of vocational agriculture students. These experiences apply to a boy regardless of whether he is going into farming or an ag-related occupation.

# TO BUILD A GREENHOUSE

*Robert B. Gambino*
*Housatonic Valley Regional High School*
*Falls Village, Connecticut*

At the Housatonic Valley Regional High School in Falls Village, Connecticut, vocational agriculture students interested in growing plants built their own temporary greenhouses. The boys, all students under the instruction of Robert B. Gambino, used ideas gleaned from industry and college sources.

The houses were constructed from ¾" galvanized electrical conduit, using two 10′ pieces to make a 20′ arch. Each arch was set into a railroad tie or 2x4 drilled to fit the tube at 24" centers. The ends of the series of arches were framed and doors hung. The whole structure was covered with a single sheet of 4 mil 20′ wide polyethylene plastic. The boys used various sources of heat and ventilation. Some had kerosene pot burners, while others had vented kerosene stoves or electric heaters. Ventilation was obtained by merely opening the doors in the morning or through the use of thermostatically controlled vent fans.

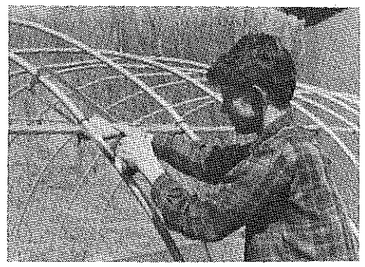
Students use a tubing bender to form the arch for the low cost plastic greenhouse.

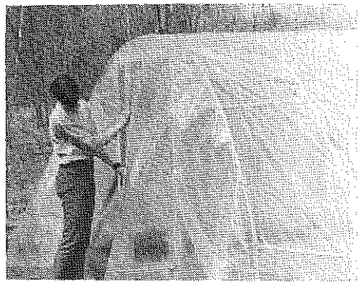
The greenhouses were used as a temporary structure to produce bedding plants and vegetable plants for sale to local customers. A more sophisticated heating system would be needed to grow plants the year around.

The actual cost for a 16′ greenhouse, 12′ wide averaged $100, including a second-hand stove and blower and a new thermostat. The area of the greenhouse could be increased easily by adding additional arches. The students involved were able to obtain various items at cost or gratis, depending upon their individual situation.

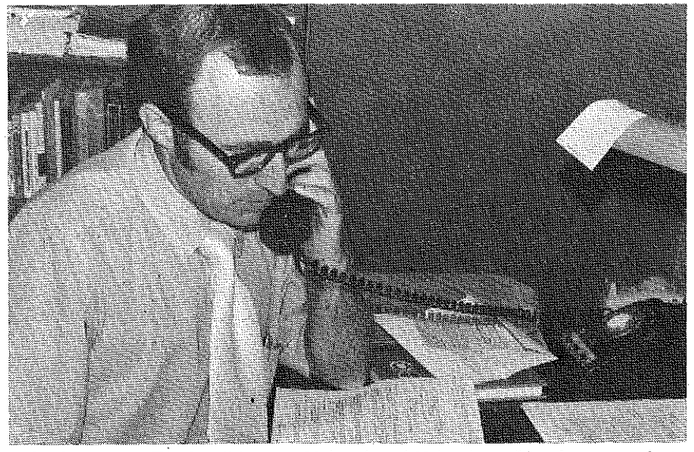
The object of this project was to familiarize the students with greenhouse construction and give them first-hand experience in heating, watering and ventilation.

Braces for the greenhouse are wired to the arches and cut to length.





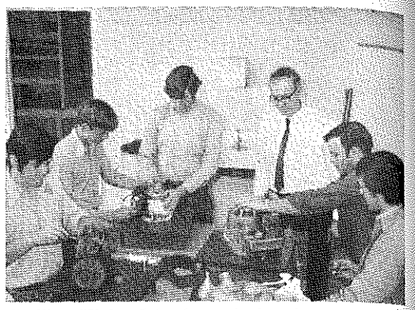
Polyethylene plastic is easily drawn over the structure and fastened to the wood foundation along the sides and ends of the greenhouse with lath. The plastic is lathed to the framing on the ends. Excess plastic at the corners is rolled tightly and fastened to the wood foundation.



Roland Peterson, Teacher Educator, University of Nebraska at Lincoln communicates with a teacher regarding a special summer program for high school students. (Photo by Robert W. Walker)

# Stories in Pictures

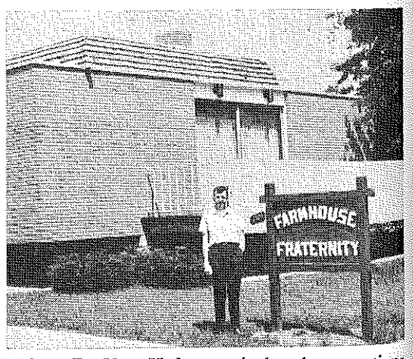
Robert W. Walker
University of Illinois



Cecilia High School agricultural occupations senior students under the direction of Benoit Guidry, instructor, engage in small engine repair. (Photo by Benoit Buidry, Cecilia, Louisiana)

Student teachers, Dale Law and Larry Gleckler are treated to an evening of fishing on the Mississippi River by their cooperating teacher, James Trotter. Larry Miller, agricultural instructor, Warsaw High School and two custodians from the same school made up the group. (Photo from James Trotter, Warsaw High School, Illinois)

Interest in agriculture to a fourteen year old boy means his like or dislike for animals, plants, mechanics and business. Since interests are learned, one could expect that Billy Walker's love for Charley may lead to a very high interest in animals when measured in eighth grade. The Applied Biological and Agribusiness Inventory available from Interstate Printers and Publishers, Danville, Illinois, measures agricultural interests of fourteen year old boys and girls. (Photo by Robert W. Walker).




Robert D. Von Haden, agricultural occupations instructor, Wrightstown High School, Wisconsin, enjoys staying at the Farmhouse while attending summer school at the University of Minnesota, St. Paul. (Photo from Martin McMillion, University of Minnesota).



# WHERE TO FIND RESEARCH AND INSTRUCTIONAL MATERIALS

*J. David McCracken*
*The Center for Vocational and Technical Education*
*The Ohio State University*
*Columbus, Ohio*

"Practically all human knowledge can be found in books and libraries. Unlike other animals that must start anew with each generation, man builds upon the accumulated and recorded knowledge of the past. His constant adding to the vast store of knowledge makes possible progress in all areas of human endeavor."[1]

Agricultural educators interested in a research topic should examine related knowledge from previous studies. Extensive use of the library and thorough investigation of related literature are time-consuming but fruitful in discovering what is already known, what others have attempted to find out, what methods of attack have been promising or disappointing, and what problems remain to be solved.

Various information systems, indexes, and abstract journals have been developed which are useful to agricultural educators who are conducting research projects.

## The Card Catalog

The card catalog, an alphabetical listing, may be compared to the index of a book. It is the index to the entire library, listing the contents of all publications found in the library, with the exception of serially published periodicals and microform materials separately indexed. These compact 3″x5″ cards provide a quick and convenient way to find all of the books, monographs, or pamphlets found on the library shelves.

[1]John W. Best. *Research in Education*. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 2 ed., 1970.

## Indexes and Abstracts

*Abstracts of Instructional Materials in Vocational and Technical Education* (AIM) is a quarterly abstract journal reporting curriculum materials, teaching guides, and student materials. These materials have been generated by universities and state departments of education, curriculum projects, etc. for teacher or student use. One section of each issue of AIM is devoted to agricultural education materials. AIM is published by the ERIC Clearinghouse on Vocational and Technical Education, The Ohio State University, Columbus, Ohio. Subscription price is $11.00 per year.

*Abstracts of Research and Related Materials in Vocational and Technical Education* (ARM) is a quarterly abstract journal reporting information useful to a wide audience of vocational educators. ARM is also published by the ERIC Clearinghouse on Vocational and Technical Education. Subscription price is $11.00 per year. Individual documents abstracted for AIM and ARM are available on microfiche or in hard copy.

*Current Index to Journals in Education* is a monthly journal indexing over 500 periodicals in education. Over 20 of these journals relate directly to vocational and technical education, including *The Agricultural Education Magazine*. Each article in the journal is indexed separately by author and subject. Subscriptions are available from CCM Information Corporation, P.O. Box 689, FDR Station, New York, New York 10022 for $39.00 per year.

*Dissertation Abstracts International* is a monthly compilation of abstracts of doctoral dissertations submitted to University Microfilms by more than 270 cooperating institutions in the United States, Canada, and Europe. Copies of the complete text may be purchased on microfilm or as zerographic prints. Subscriptions are available for Section A (The Humanities) for $60.00 per year from University Microfilms, A Xerox Company, Ann Arbor, Michigan 48106.

*Education Index* is a monthly (except July and August) publication which provides access to periodicals, proceedings, yearbooks, bulletins, and monographs. Subscriptions are available from The H. W. Wilson Company, 950 University Ave., Bronx, N.Y. 10452. Annual subscription price is $25.00 per year.

*Research in Education* (RIE) is a monthly abstract journal of recently completed research reports, descriptions of exemplary programs, and other documents of interest to the educational community. Copies of the complete text of documents announced in RIE may be purchased on microfiche or hard copy. Subscription price is $21.00 per year from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

*Summaries of Studies in Agricultural Education*, by region, are compiled annually. These summaries contain staff studies, doctoral dissertations, and masters' theses completed in agricultural education in the Midwest, Northeast, Southern, and Pacific regions. Copies may be found in teacher education departments or state departments of education. These *Summaries* are also announced in RIE and thus are available in microfiche and hard copy.

## Obtaining Assistance

Over forty states have established Research Coordination Unites (RCU's) for vocational-technical education. Many RCU's have been able to answer individual requests for information from vocational educators in their state.

# INSTRUCTIONAL MATERIALS?

*A. H. Halcomb, Specialist*
*Vocational Agricultural Education*
*State Department of Education*
*Field Office*
*Auburn, Alabama*

***Mr. Teacher, how are you fixed for instructional materials?***

"Instructional materials? Man, don't come at me with that kind of question! Look at this — these cabinets are full of material that I have collected and used since I began teaching — and that ain't been recently, either. All these new fangled visual aids and stuff — that's for those birds just out of college — but I'm an old dog and you know it's difficult to teach old dogs new tricks."

***Mr. Teacher, what kind of automobile are you driving to school?***

"Huh? Oh, the latest and finest that money can buy. Got two four-barrel carburetors, four-on-the-floor — got to keep in pace you know. Wouldn't do for the Vo-Ag teacher to be seen driving an out-of-date vehicle. Ah, you know what I mean. Students would think I'm old fashioned or something."

***How about these old slides and filmstrips, Mr. Teacher?***

"Well, let's see. You mean this one showing the mule drawn cultivator dated 1938, or this one of some adult farmers posed by a 'Model A'? I still use them — principles are the same."

***And so it went on — charts, lesson plans, bulletins, books — old as the hills!***

"Now look here young fellow, if all my 'stuff' is so antique — I can't throw it away — what would I use? Where can I get all this latest material you speak of?"

***Okay, Mr. Teacher, you asked for it! There is such an abundance of instructional material available today that it isn't a matter of finding something to use, it's deciding what to use.***

***Types of materials? You name it — it's almost sure to be available. Charts, slides, filmstrips, transparencies, tapes, books, specimens — we could go on and on.***

***Wait a minute — you mean audio visual equipment? Sure, almost every department in this state has an overhead projector, slide/film-strip projector, tape recorder, ditto machine, opaque projector — some have a new 16mm film projector.***

***Your department doesn't have that kind of money? Mr. Teacher, many instructors have been able to equip their departments with instructional materials obtained through some of the federal title programs — Title II for example. Might check with your principal or superintendent about that. Where there's a will, usually there's a way.***

***Good teaching materials are also available free from commercial companies. Watch your mail closely. Such items come across my desk almost every day. Many teachers make their own visual aids — charts, slides, etc. Students enjoy helping, too. Seems like a good idea — let students make'em, then study'em. Many good bulletins and pamphlets are available from the state agricultural experiment station and the cooperative extension service. Many Vo-Ag departments are getting several sets of good reference books through free textbook programs or other sources.***

***Say, you heard that several states have been bombarding the Vo-Ag teachers with instructional materials? Well, you heard right. Take Alabama for an example. Their teachers have recently received instructional units with such titles as Soils, Plant Food and Fertilizers, Personal Development, Suggested Course Outlines for grades 7-12, Vo-Ag Shop Guides for First and Second Year Students (workbook type), originals for making transparencies — just to mention a few.***

***For the third and fourth year students enrolled or studying in specialized courses (occupational objectives), fourteen individual student study guides have been developed for their use.***

***Any materials for adult work? You bet! For example, every Vo-Ag teacher in Alabama received a publication containing the contents of ten ETV programs for adults. Prior to each telecast, teachers also received suggested outlines for that lesson — interest-getting statements and questions for possible discussion before and after each telecast.***

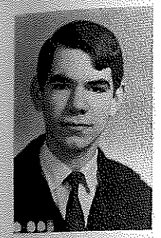
***Spoon feeding teachers too much? Teachers of Vo-Ag are busy people — developing instructional materials is time consuming. Are they receiving more "stuff" than they can possibly use, Well, that's a matter of opinion. Wouldn't you much rather have some left-overs to place in the refrigerator at night than go to bed hungry?***

"Yes sir, sure glad you dropped by my department. But I could have saved you a trip. You see, I'm retiring tomorrow."



# MORRIS FFA SCHOOL FARM PROVIDES CHALLENGE

*Bill Bearden, Jr., FFA Secretary*
*Morris, Oklahoma*



A long time need came true last fall when the Morris FFA chapter with financial help from the local School Board and the Federal Government, obtained a 10 year lease on 10 acres of land just ¾ mile south of the vocational agriculture building.

A $400.00 minigrant from the Federal Government was designed to help members of the Morris vocational agriculture department who had no facilities for a supervised farming program. The School Board and J. C. Wilson, Morris Superintendent of Schools, immediately approved $1,000.00 to go toward construction of facilities for the farm.

An essay contest to name the layout followed with over 700 students eligible for participation. Green Hand FFA member, William Whiteagle, submitted the winning entry and received the $10.00 first prize. His name was: "Morris FFA School Farm." He stated in his essay that he felt this name should be selected because this project was a joint effort between the Morris FFA chapter and the Morris School District I-3 and that he felt both names, Morris FFA and School should be included. Money used for first prize came from donations.

## SKILLS DEVELOPED

The task of readying the acreage for use gave members of the Morris Vocational Agriculture Department an opportunity to develop many skills in the farm shop as well as on the farm.

Members constructed twenty 6'x10' A-framed hog houses to be used for swine shelter. In the shop they also welded 21 corner braces for fencing and set them in concrete which was donated to the group.

Two concrete slabs were poured to serve as a base for the watering tank and a large self feeder.

The task of brush hogging out a lot of underbrush and small trees was made easier by Roy Callaway, an honorary member. Mr. Callaway furnished the tractor and brush hog and Wayne Callaway, a member of the Morris Chapter did the actual clearing.

Fencing was done as a class project with each of 92 members enrolled playing an important part.

Probably the biggest single project was the construction of a 12'x60' calf barn. Members again put their skills to work and completed the task.

## Co-op Formed

With practical facilities completed, a 23-boy co-operative was formed. Officers were elected and a $2,000.00 loan was received at the Morris State Bank through H. K. Greer, Morris State Bank President, another honorary chapter farmer of the Morris Chapter and a state honorary farmer of the Oklahoma FFA Association.

Fifty-two head of swine were fattened out with 26 of them competing in the annual Okmulgee County Livestock Show.

## *Everything Not Easy*

Members of the co-operative got a lesson on the bad side of livestock farming as a mysterious disease hit the herd and killed two of the larger animals. It also slowed the rate of gain on the entire group and ran up a medicine bill on the survivors. A post-mortem by the local veterinarian, got the problem solved with a loss of profit, but a good lesson in treating the disease, analyzed as necrotic enteritis.

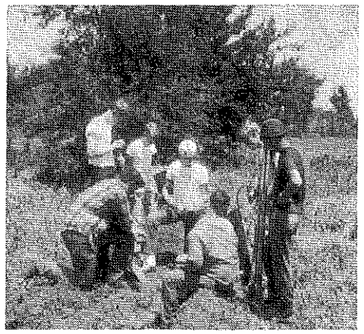
When the animals were sold, members paid off the loan, interest, and divided over $200.00 in profit on the project.

Water was hauled in a 500 gallon water tank through the winter but more convenient means have been established since. As the hot Oklahoma sun beamed down, the need for a convient water system was evident. A 50' deep well was drilled at a reduced price by a local well driller. Chapter members helped and luckily hit a good well of water. Complete installation of a water system, including a pump, pressure tank and over 300 feet of water line, was completed by chapter members. Running water is now available to every pen.

The farm will have six individual calf pens with 10'x12' shed space in each and 10'x110' of pen space. They are built on a natural slope that should provide excellent drainage.

Ten individual hog pens with sheds and shade in each pen will handle the hog layout. A large pen is also on hand for group feeding projects that will handle 100 head of swine.

So far, 29 boys have utilized the school farm. The problem of not having a place to keep an animal project no longer exists in the Morris community.



Chapter members installing a new water system for the school farm. Starting at the left are Mike Claborn, Ronald Aldridge, James Crowell, Bill Bearden, Jr., advisor Joe Ring, Chuck Casselman, Edward Allen and Loren Aldridge.

# IDEAS FOR EFFECTIVE TEACHING

*Willie J. Walls, Program Consultant*
*State Department of Public Instruction*
*Greensboro, North Carolina*

Today's complex and diversified educational systems are designed to prepare students with many different backgrounds and aptitudes for life's challenges and the world of work.

These educational systems should be able to meet the needs of all of the students — superior, average and below average. To effectively meet the needs of these widely varied aptitudes and interests of individuals, the instructor must learn and effectively use many teaching techniques. These techniques must include: (1) good teacher-student relationship, (2) good personal qualities, and (3) a relevant instructional program which is being carried out, using many different techniques and methods to reach all of the students in the class. The instructor must develop and maintain a satisfactory relationship with his students. He must be interested in and try to understand each individual student's problems and capabilities.

One of the practical ways of showing an individual student that you are interested in him is by knowing and calling him by his first name rather than referring to him by "the student in the last row" or by a nickname. An instructor should never embarrass a student before other students. A student should be judged by his present performance and not on his past record. Whenever a student makes progress, the instructor should readily commend him. The commendation may serve as a stimulus for the student to achieve greater things. The instructor should periodically ask the students to give candid and frank reactions and remarks of their feelings about an instructor. The students should be assured by the instructor that their remarks will not in any way affect their grades. The instructor, by evaluating these remarks made by his students, will be able to discover some of his assets as well as his weaknesses. Some of the remarks given by the students may hurt, but the instructor can use them to his advantage if he really wants to do a better job.

Due to continual personal contact with students, an instructor should have good personal qualities. Paramount of all of the needed personal qualities is honesty. An instructor should have accurate records of all funds, equipment and supplies. An instructor should develop poise so that his weakness, such as self-consciousness and poor posture, will not decrease his teaching effectiveness. The instructor, of course, must know his subject matter and possess the ability to impart his knowledge to his students.

The curriculum and its content must contain courses which are relevant to the today's demands and the students' interests and demands. School officials and instructors must continue to evaluate the curriculum and make the necessary adjustment in the curriculum to keep the content in tune with the times.

The instructor must keep in mind that in his class there are many types of students, including those with special needs — those students who cannot learn at the same rate as other students in the class who are average mental and social achievers. Much effort is being put forth to provide students with special needs with the type of training which will allow them to achieve at their own level. The Congress of the United States has appropriated large sums of money to be used in vocational training for students who are disadvantaged and handicapped. Teachers of agriculture, as well as other teachers, are attempting to use many methods and techniques in teaching those students who fall in the classification of the disadvantaged and/or handicapped.

Textbooks are one way of obtaining information. Despite its many advantages, a textbook can be dangerous of verbalism — an empty form of words. Some classroom instructors place too much reliance on the textbook. The textbooks do very little to demonstrate the point under study — to simplify it for the student. At this point some other method of presenting the information must be emphasized. Something other than a textbook must be used. Audi-visual aids may be very helpful in the learning process. Teachers of vocational agriculture must become familiar with and properly use audio-visual aids in their teaching process. Audio-visual aids can make the past come alive and the present a richer experience. Since most students learn easily and quickly through the sense of sight, the use of audio visuals should be used regularly. Audio-visual aids make learning more permanent and develop a continuity of thought. This is especially true with motion pictures. Audio-visual aids should be used as an instructional device and not merely as an entertainment feature. After an audio-visual presentation, the instructor should test the students to see how much they have learned. Truly audio-visual materials, video and audio tapes are excellent teaching devices but they have their limitations in reaching all of the students and stimulating them to learn at the rate they should be learning.

Another method which can be used to reach most students enrolled in vocational agriculture is demonstrations. Demonstration can be one of the most effective teaching techniques, or methods used by a teacher. Most students can learn faster and more effectively when they are shown how something works, or how a job is done. An effective demonstration requires more than a demonstrator and an audience. Audio-visual aids—the chalkboard, film strips, a felt board, a chart — are frequently used by the demonstrator. Demonstrations must be carefully planned in advance and the instructor should rehearse the demonstration before class to determine the time required to perform it and to iron out the weak points. During a demonstration the instructor should ask questions and encourage the students to ask questions.

Involving students in shop activities is another technique by which students acquire skills. Shop activities and projects comprise a major part of vocational instruction. Students learn best by actually doing the job. The instructor should select projects which are compatible to the objectives of the course being studied. Since provision for individual differences is necessary in good teaching, shop projects and laboratory experiences that challenge the ability of every student — slow, average and advanced — should be assigned. The instructor should assign the projects first which are easiest to do to guard against frustration on the part of the students. When checking a project which has been completed, the instructor should compliment the student on his good points first. This is done to allow the student to feel that he has achieved something and to maintain his interest. However, the weak point should also be pointed out and the student told why the weak points did not meet the standard. Special effort and time may need to be spent with students who possess limited abilities to achieve at the normal rate. These slow achievers may have to be assigned special projects — those they can complete.

To be a good teacher means that one must know his subject matter and he must be able to impart information to the students in such a manner that each of the students in his class will have an opportunity to develop and achieve at his or her level. This will require knowledge of each student, patience, and the use of varied methods and techniques of teaching students with varying abilities and interests. The teacher should acquaint himself with innovative teaching devices and techniques. Time should be allocated and training provided for the teacher of agriculture to become familiar with the proper use of records, filmstrips, transparencies, film loops, cassettes, and other teaching aids. This will aid in equipping the teacher of agriculture with the techniques and methods of instructing and possibly reaching all of his students, regardless of their intellectual abilities and interests.

## TEN COMMANDMENTS FOR THE TEACHER

1. PREPARE YOUR LESSON WELL. A lack of proper preparation is the unpardonable sin of a teacher. Nothing will inspire the confidence of his class so quickly as the teacher who makes adequate preparation of his lesson.

2. BE PRESENT WHENEVER POSSIBLE. Unnecessary absences will not teach your students to be punctual in their attendance, and will hinder interest and progress in your class. When it is necessary to be absent, always advise your substitute in sufficient time for him to make necessary preparation.

3. BE ON TIME. Negligence and indifference on the part of the teacher will soon be absorbed by the class. Be present several minutes before the time set for the class to begin.

4. BE PERSONALLY INTERESTED IN EACH MEMBER OF YOUR CLASS. Call members by their names. Be interested in the limitations and problems of each member of your class, and willingly give such attention or assistance to those problems as you can.

5. BE ATTENTIVE OF THE PHYSICAL CONDITIONS OF YOUR CLASSROOM. Before beginning the lesson, make necessary adjustments of the lights, ventilation, window shades, seating arrangement, maps, charts, blackboard etc.

6. BEGIN AND CLOSE PROMPTLY. Do not wait for late comers, and do not extend the lesson beyond the time set to end the class. A violation of either of these points will distract interest from your class. Your promptness will beget promptness in your pupils.

7. DO NOT DO ALL THE TALKING. Do not make your lesson a lecture, as it takes a near genius to give an interesting lecture. Encourage class discussion. Never tell anything you can get your class to tell.

8. DO NOT PERMIT ARGUMENTS IN YOUR CLASS. Nothing will kill interest more quickly. Permit discussion of differences, but when they turn into arguments, pass on to the next question or point of discussion.

9. REALIZE YOUR SERIOUS RESPONSIBILITIES. Be as serious as possible about your teaching. Realize that what and how you teach may lead your pupils to fuller understanding and appreciation or discourage their acceptance of the facts presented.

10. BE INTERESTED IN YOUR CLASS. Consider your student, and be wise in your teaching. A good slogan for teachers is: "If the student hasn't learned — the teacher hasn't taught."

—Victor M. Wohlford

# UTILIZING LAND-LIVESTOCK LABORATORIES

*Fred Amator, Graduate Student*
*Agricultural Education Department*
*University of Arizona, Tuscon, Arizona*

School land-livestock laboratories have been used many years for the purpose of providing vocational agriculture students with a variety of agricultural experiences while retaining the concept "learn by doing." A school operated laboratory can provide the facilities for demonstration teaching and practical agricultural experiences for students and contributes to positive student motivation and interest. Studies indicate that school land-livestock laboratories have disadvantages which have caused vocational agriculture teachers to discontinue use and discouraged others from initiating their operation. Too much teacher time, exploitation of student labor, improper timing of essential operations, and excessive financial investment were found to be the most serious disadvantages.

An investigation was conducted in Arizona for the purpose of utilizing land-livestock laboratories based upon a model concept. The concept, as proposed, was identified as an organizational plan which demands the involvement of all students in a specific organized class-laboratory activity of production agriculture. Within a department of vocational agriculture, a model for land-livestock laboratory utilization purports structuring the various classes into various different production agriculture activities. These activities were identified as *modules* operating within the framework of the model concept. Each module was further identified as including the necessary instructional units specific to the production activities selected, an organizational plan for coordinating classroom instruction and laboratory activities, and stated requirements for necessary physical facilities to operate the module.

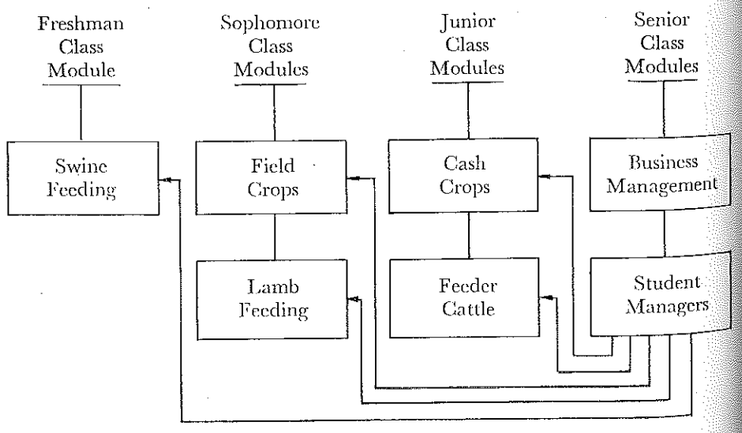
As a coordinated organizational plan the model concept also recognizes that there are specific elements of agricultural science and business management practices which are common to all modules. Guidelines, policies and procedures which direct, provide continuity and organizational stability were also identified as the common core of practices which are essential to successful laboratory utilization.

The following construct illustrates the application of utilizing the model concept. Entries in the construct are for illustration purposes only and should not be interpreted as the recommendations.

To evaluate the concept, a pilot test of a swine production module was initiated in cooperation with the Vocational Agriculture Department, Marana, Arizona. Procedures used in the pilot program were to:

1. Identify and develop a "core" of instructional units which would provide coordination of approved swine production activities and business management practice in a logical sequence. The units included initially a determination of economic feasibility and terminated with an analysis of measures of performance.
2. Develop physical facilities for confinement feeding feeder swine to market weight.
3. Solicit student, teacher and school administrator's reactions to the school land-livestock laboratory utilizing a swine feeding module.
4. Evaluate performance of the feeder swine and facilities.
5. Identify guidelines and management policies to utilizing laboratories involving the model concept.

Based upon the observations, reactions and production results, it was determined that the model concept has desirable organizational characteristics which can enhance the utilization of land-livestock laboratories for instructional purposes. It was determined that an entire class could be successfully involved in a production module and that the instructional units can be identified and coordinated with laboratory involvement.




It was further identifiecl that a land-laboratory should be initiated and utilized for the purposes of providing:

1. Experiences that are instructional rather than profit orientated.
2. An opportunity to integrate and articulate theory with approved practices in agriculture.
3. Physical facilities and conditions for teaching by the "hands on" concept.
4. Material conditions to teach procedure by the "demonstration" method and to apply approved practices.
5. Conditions for decision making which have real life characteristics.
6. Opportunities for students to experience ownership, responsibility, cooperative endeavors and a sense of accomplishment.

It is recommended that before implementing the model concept the philosophy of group (class) participation be completely understood, the modules identified and the organizational plan approved by the advisory committee and school officials.

The model concept for utilizing land-livestock laboratories has been pilot tested in only one vocational agriculture department in Arizona. The concept will be given additional attention by the Agricultural Education Department staff, University of Arizona, as a technique for involving students of vocational agriculture with opportunities for integrating principles of agricultural science with the "doing level" application.

# THE FFA AS A TEACHING RESOURCE

*Page Backarich*
*Willcox Public Schools*
*Willcox, Arizona*

Born in depression and nurtured in adversity, no more effective teaching tool than the Future Farmers of America has ever been devised. As versatile as the imagination, powerfully motivating, and above all, a common bond among boys that have similar backgrounds, goals and challenges. The only limiting factors are the time and imagination of the advisor.

The first step in using the FFA as a teaching tool is to "think big." Accept only quality workmanship and adapt the program to the local situation. Above all, the program must be challenging and real. Micky Mouse and psuedo situations are the antithesis of good education.

The possibilities are infinite. With color, tradition, ceremony, and pageantry, there is an opportunity to develop pride in the organization and a challenge for every activity. The first step is to develop pride in the organization and, in turn, the individual. With pride comes confidence and from confidence comes ability and from ability a willingness to explore and accept new problems and situations.

The FFA lends itself to developing a compact, close-knit organization that can identify with community problems. If the advisor is a long-tenure teacher, his continuity of leadership continuously implements service projects. In the community this is a valuable asset and develops leadership, community pride, and an awareness on the part of the boy that he is an important part of the community development process.

The potential motivation provided by the FFA Foundation, various awards, and contests is rewarding to say the least. A case in point is parliamentary procedure. A contest provides early motivation for excellence and chapter meetings provide opportunities for continuous improvement and reinforcement.

With numerous judging contests in the state field days, almost every unit taught has some application in at least one of these contests. This causes boys to give whole-hearted attention, speculate a little, and try a little bit harder to retain each particle of information.

Foundations awards and advanced degrees cause boys to reach a little further and become better men. Minimum course requirements are easy to meet, but the goal of becoming a State Farmer or even an American Farmer challenges the boy to broaden his horizons and become involved in problems and situations that develop real potential.

Group activities, such as camping trips, horse shows, rodeos, and Christmas baskets, offer a real opportunity to develop leadership ability. Planning, organizing, budgeting time and money, selling and expediting are skills that must be demonstrated here. Perhaps best of all, plain old American stick-to-itiveness are learned from these large projects. The boy learns the reason for careful planning. He learns that no matter how long a day or how tired he is, the show must be brought to a successful conclusion. The sheer magnitude of the task teaches delegation of authority, and from this he learns to judge men. He learns that here, the penalty for a poor performance is not a low mark on a card, but financial catastrophe and a loss of face in the community. He learns to face reality.

The FFA, flexible, exciting, challenging, as solid as yesterday and as modern as tomorrow, offers unlimited opportunities for effective teaching.

# THE "PLANT OF THE MONTH" AIDS IN PUBLIC RELATIONS

*Karle Lucal*
*Horticulture Instructor*
*Penta County Vocational School*
*Perrysburg, Ohio*

*Gilbert S. Guiler*
*Teacher Educator*
*Ohio State University*

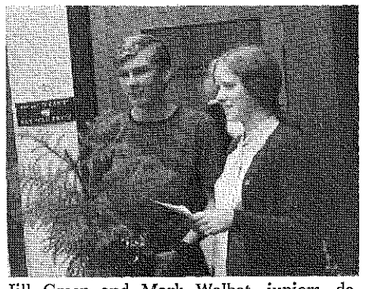
Vocational horticulture teachers occasionally find it difficult to keep students busy at certain times of the year, to find ways of informing school administrators and faculty about horticulture and the vocational horticulture program. At Penta County (Ohio) Vocational High School, an area vocational center serving participating school districts in five counties, we are attempting to solve these problems through a public relations idea called "plant of the month."

The "Plant of the Month" was suggested by the director of the area vocational center. Basically the idea is to place a different plant each month on the desk of school superintendents, principals, guidance counselors, librarians, and regular staff members.

Offices and rooms which receive a lot of traffic by visitors, parents, salesmen, or students are excellent places to exhibit these horticulture products. The plants are a way of advertising the horticulture program at the school; they create a conversation piece, as well as encourage a small amount of horticultural maintenance on the recipient's part. The idea has helped develop good public relations between the administration and the horticulture department. The "Plant of the Month" alerts visitors from the community to the horticulture department. Many times these visits result in requests for floral work for organizations and individuals in the community. The production of the plants each month involves students in the culture, decorating, and marketing of horticulture commodities and the acquisition of skills needed to perform these tasks.

The rules for membership in the Plant of the Month Club are simple. The first plant is delivered in September and the plant must remain on the desk of the recipient until the next month's plant is received. When a new plant is received, the old one can be taken home or disposed of in any manner. The fee is $15 for nine months, the last offering being in May. This is a non-profit venture and is done on a cost basis, payable with the first offering in September.

Efforts are made to present a different plant each month and to keep in tune with the season of the year. The first offering in September is generally a pot of foilage plants or a dish garden. The reason for this is that the students have not been in school since the previous May or June and there has been no production in the greenhouse during the summer months. November has always been a month when a dried arrangement has been made up using straw flowers, Indian corn, strawberry corn, corn husks, bittersweet, and other dried material. Christmas is a season when natural cut evergreens, candles, pine cones, red velvet bows, and small glitter balls or ornaments are made up in a centerpiece. Valentine Day, Easter, and Mother's Day are other days to remember in the nine-month period.

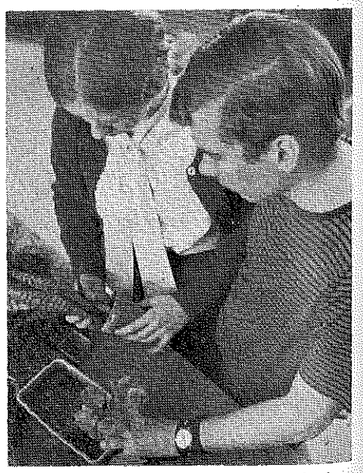


Jill Green and Mark Walbet, juniors, delivering a Norfolk Island Pine to the principal's office. This was the February **Plant of the Month.**

Students deliver the plants to subscribers. A brochure accompanies each delivery giving a description of the plant(s), the botanical name, the common name, the native habitat, and instructions on how to care for the plant(s).

From a small beginning two years ago of 31 subscribers, we are now delivering 68 plants every month. We have not accepted anyone not affiliated with the Penta County School District because we would be unable to handle that large number of subscribers. However, upon delivering the new plants every month we do find a few people, not subscribers to the "Club" who take a particular fancy to that month's offering. These people are generally staff members and they can usually get one or more of the extra plants we usually have. They pay $2.50 for a single month.

We have found this an excellent venture for everyone involved — students, instructors and the recipients. The students become curious about what the next month's offering is going to be, and some make suggestions of their own. We encourage this because students have many good ideas that should be exploited as much as possible.



Jill Green and Mark Walbolt, juniors, making a dish garden for the **Plant of the Month.**



# USING PERFORMANCE OBJECTIVES IN INSTRUCTIONAL MATERIALS

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*Agricultural Education*
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Performance objectives are recognized as being only a step in the instructional system but a step which provides for focusing learning upon the student and a step which can lead to evaluation and the improvement of instruction. The alert teacher, when given a chance to understand their use, will observe the impetus provided by performance objectives and see their use and effectiveness. A question that then arises is, "What opportunities can be provided vocational agriculture instructors to discover the use to be derived from performance objectives?"

Observations made by graduate students who were former vocational agriculture instructors indicates that the transition to thinking of, and using performance objectives is not an easy one.

If teachers do not understand the use of performance objectives, they will fail to utilize their advantages in teaching. In-service education classes, graduate work or non-credit workshops are likely methods of helping teachers understand and use performance objectives. It is hoped that instructors who read this article will seek a more complete understanding of the values of using performance objectives.

*First, performance objectives focus upon student learning.* When used properly these objectives define expected changes in student behavior by setting forth pre-determined or expected changes. If there is no observed change in student behavior how can a teacher say he has taught? This raises a fundamental question concerning teaching and the implications are beyond the scope of this discussion. However, even the most incompetent teacher can see the need for positive alterations in student behavior. The use of performance objectives gives the instructor a vehicle by which to measure the changes in student behavior and places the focus of teaching upon the learner.

*Second, the use of behavioral objectives gives the instructor a tool with which to evaluate his instruction.* When a teacher finishes an area of instruction how does he know whether he has achieved his objectives? Can he determine the degree to which the objectives have been achieved? With the use of properly written performance objectives the instructor can determine to what extent students have achieved the unit objectives.

This is because objectives written in performance terms are not open to many interpretations, i.e., terms are used that specify a certain explicit student behavior.[1] They specify a measurable level of attainment or minimal criteria acceptable for achievement of an objective. If an objective meets these criteria the instructor has something with which to work. He can set forth desired student behavioral changes and then through evaluation processes, see if a change in student behavior is evident. Without performance objectives he can only speculate about his teaching effectiveness.

*Third, the use of performance objectives facilitates the improvement of instruction.* The use of the performance objectives allows an instructor, once he has evaluated his student's performance, to analyze and adjust his teaching techniques. If there was poor attainment of the expected behaviors, the instructor will know it. He may want to revise the objectives. If he feels the students were not at fault, a review of the objectives may be necessary. Ultimately, realistic and achievable objectives must be outlined. They must be explicit. They must be focused on the learner. It is easy to write unrealistic and nonattainable objectives; therefore, periodic review and adjustment of objectives is necessary. If the objectives are appropriate the next question is "What alternations in teaching technique are needed to bring about the desired changes?" The major advantage is that by using performance objectives the teacher can determine whether or not learning took place as desired.

Performance objectives can act as an "agent of change" for local instructors by providing for specific statements of desired student change and a basis for measuring if the change occurred. It is then up to the instructor to make use of objectives written in performance terms. Performance objectives should not be viewed as an end in themselves. They should be viewed as a means to an end, the improving of the teaching-learning process.

[1]Mager, Robert F., Preparing Instructional Objectives, Fearon Publishers, Palo Alto, California, 1962.

# HORTICULTURE FIELD TRIP

*Richard S. Lindstrom*
*Department of Horticulture*
*Virginia Polytechnic Institute*
*Blacksburg, Virginia*

The subject of horticulture has become an increasingly popular area in agricultural education in recent years in Virginia. However, many agriculture instructors find themselves teaching horticulture with very little background. Several agriculture instructors presented their problems to the Horticulture Department at Virginia Tech; and, as a result, a summer program was initiated to develop a broader background for them. College courses were developed by the Horticulture Department to help agriculture instructors assimilate basic information in the field of ornamental horticulture.

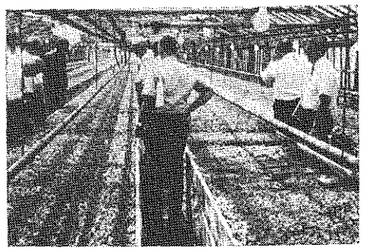
Under the direction of Dr. Richard S. Lindstrom, Department of Horticulture, and Professor C. S. McLearen, Department of Agricultural Education, a one-week field trip was planned for the last week of July, 1970. The objectives of this field trip were twofold: (1) to view the operations in different areas of ornamental horticulture, and (2) to communicate findings to students in the agriculture programs of Virginia.

A special study course entitled, "New Techniques in Horticulture Management," was offered. The instructors were asked to write a term paper in which they would evaluate and determine the relative importance of these occupational techniques in relation to the courses offered in high schools.

The first stop of a 1,200 mile field trip was at Barberton, Ohio, a suburb of Akron. Yoder Brothers, Inc., produces more greenhouse and hardy chrysanthemum cuttings than any other company in the world. In addition to propagating chrysanthemums, they have developed new geranium varieties for the bedding plant industry, new azalea varieties for the greenhouse industry, and new lines of greenhouse snapdragons. At present, they are interested in developing new varieties of poinsettias for the floriculture market. At Barberton, they have 2 greenhouse ranges each approximately 3-4 acres of glass.

Yoder personnel met with the instructors and spent two hours answering questions. The questions included inquiries about the possibility of producing different plants within high school greenhouses in Virginia and ways of procuring cuttings, bulbs, and equipment for high school crop production.

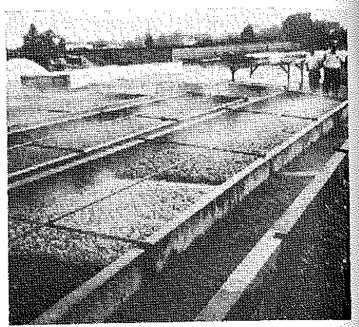
The next morning the teachers stopped at Mercer Greenhouses, Inc., at Mercer, Pennsylvania. There are approximately five acres of glass in the Mercer range. Some of the newest automatic equipment and growing innovations have been incorporated in this greenhouse range. From the marketing angle, it is unique in that their products can be marketed anywhere from Chicago to New York overnight; therefore, they are very flexible as to their markets.



The chrysanthemum propagation greenhouse on the seven acre Dunbar-Hopkins greenhouse range at Ashtabula, Ohio.

From Mercer, we traveled to Ashtabula, Ohio, where the Dunbar-Hopkins Company has seven acres of greenhouses in which are grown only standard and pompon chrysanthemums on a year-round basis and marketing is in the New York-Pennsylvania area. This large range allows profitable propogaation of chrysanthmum cuttings, whereas smaller greenhouse operators do not try to propagate, but buy their cuttings from some larger concern such as Yoder Brothers.

Also in Ashtabula is the Mikkelsen poinsettia range. The Paul Mikkelsen poinsettia originated in this range 10 years ago and completely rejuvenated the poinsettia market. It is the first variety to have colored bracts that remain on the plant for a long time after being purchased. At the Mikkelsen range the instructors viewed the breeding program and method of producing cuttings for growers throughout much of the United States.



Cold frames on the Wayside Gardens farms at Mentor, Ohio, used to propagate many of the perennials sold by the company.

On Wednesday morning, the group went to Lake County, Ohio, one of the largest ornamental horticulture or nursery-crop growing areas in the United States. At the turn of the century, it was probably the largest producer of nursery material. Approximately 600 nurserymen in the 2-county area have nurseries ranging from 1 to 2 acres up to one with more than 2,000. Lake County borders Lake Erie, the soil is sandy and well adapted to the ball and burlapping of taxus and juniper. This nursery field offers great possibilities for the student who is interested in this type of agriculture.

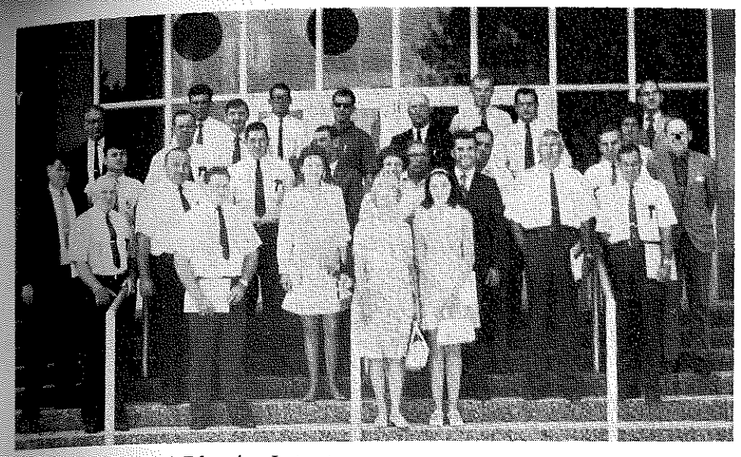
The first company visited in Lake County was Wayside Gardens, a large retail outlet which sells through selected retail nursery outlets in the Cleveland area.

The second nursery visited was Horton Nurseries, the largest in the Mentor area, with 2,000 acres under cultivation. The major crop is the foundation plant taxus, which is shipped throughout the entire northern part of the United States. They also grow and sell rhododendron, viburnums and other shrubs.

Bosley Nurseries, the third stop, specializes in ericaceous plants; their hardy azaleas, rhododendron, and hollies are some of the finest in the country. During the winter of 1934-35, there were severe winter temperatures, and Bosley's plants today are from stock that survived that cold winter.







Virginia Agricultural Education Instructors on the Ornamental Horticulture Field Trip standing in the main entrance of the new Horticulture and Forestry Building located on the Ohio State University Campus.

The Wyant nursery was next on the agenda. Wyant, a rose specialist, not only grows his own rose understock, but also grafts or buds his stock in the field. The roses are grown for three years and he develops a fine plant during that time. The instructors watched the budding operation, and looked over facilities for holding the plants through fall and winter.

Mr. Walter Poetsch, of Lord & Burnham, was our next host. This company, along with Continental Products Company of Cleveland, took us through the Continental Products plant at Euclid, Ohio, where we saw the mixing of paints and putties for the greenhouse trade.

The instructors next visited the Cleveland vocational agriculture facilities, beginning with the horticulture division at Washington Park in the center of Cleveland. Approximately ½ acre of glass has been built for student instruction in the Cleveland public school system. The Cleveland school system transports students interested in the horticulture program.

Three full time instructors at West Technical High School in Cleveland and one professional horticulturist handle growing and servicing for horticulture programs throughout the city. During the summer the greenhouses at West Tech develop plants and materials for many of the courses that are offered for the elementary, junior, and senior high schools. A horticultural summer school program starts at the tenth grade level.

In the southwestern section of Cleveland, Buckeye Knoll Greenhouses comprise approximately 2 acres. When the greenhouses were built, production was centered around chrysanthemums; but the change to rose production about three years ago has been very successful.

After Buckeye Knoll, the instructors went to Hall Gardens, where two brothers operate four acres of year-round chrysanthemums. They ship several truckloads of chrysanthemums to the Pittsburgh market every week in addition to their Olmsted Falls outlet.

The next stop was at the Cleveland Vegetable Packing Company in Berea, Ohio. Approximately 600 acres of tomato greenhouses are located in and around the southwestern portion of Cleveland. As many as 300 acres of these greenhouses produce tomatoes that have been packaged and shipped through this cooperative.

The group then visited the four acre tomato range of Dean's Greenhouses in Westlake, Ohio. Many of the greenhouse ranges in the southwestern part of Cleveland produce 2 crops a year, planting the first one in January and harvesting through the Fourth of July. Then this crop is pulled out, the soil pasteurized, and a new crop is planted around the first of August to be harvested through Christmas.

Thibo Brothers Greenhouses of North Ridgeville, Ohio, has 2 ranges consisting of 5 acres where they grow only geranium stock plants for propagation. The Thibo Brothers sell rooted and unrooted geranium cuttings any time of the year to the greenhouse floriculture trade.

Friday afternoon, the tour stopped at Maple View Farm, whose 65-acre apple orchard is approximately 16 miles from Lake Erie. In the past 20 years, they have developed an interesting roadside market with an impressive building. The main item is apples; but they also sell vegetables and other food products such as jams, jellies, and cheese. They are building another section to include a flower shop.

Friday afternoon the group visited the Horticulture Department facilities on the campus of Ohio State University. A new building and automated greenhouse facility at the university have been in operation since May 1970. Saturday morning the group visited 2 large retail nurseries in Columbus.

The remainder of the morning was spent discussing the agricultural education program in Ohio with Dr. Ralph Bender, chairman of the Agricultural Education Department and Dr. Daryl Parks, a member of the Agricultural Education Department of the State Board of Agriculture in Ohio. Many questions were asked of Dr. Bender and Dr. Parks about the operation of the horticultural-agricultural program in Ohio in comparison with that in Virginia. Several teaching ideas were gained by the instructors from Virginia. Following the meeting with the Ohio agricultural education people, the Virginia instructors boarded the bus and returned to Blacksburg, Virginia — a tired, but well-informed group.

# BOOK REVIEWS

COTTON INSECT CONTROL by David F. Young, Jr. Birmingham, Alabama: Oxmoor House, 1969, $7.95.

Dr. Young, Extension entomologist for the Mississippi Cooperative Extension Service, has written this book especially for today's cotton farmer. It is a quick and easy reference providing a relatively complete source of information about cotton insects. *Cotton Insect Control* is well illustrated with both black and white and color photos. It should be a valuable reference for modern cotton farmers, county agents and vocational agriculture teachers.

A resume of important primary and secondary cotton insects is given, complete with life cycle, physical characteristics, and chemical controls. Several possible chemicals and their recommended rates of application are shown in table form for each insect listed. One chapter is devoted to describing beneficial cotton insects and the role they play in cotton insect control. Biological and ecological approaches to insect control are suggested as alternatives to chemical control. Practical methods for determining the need for insecticide application and techniques of application are discussed. A chapter on the safe and proper use of insecticides reminds farmers of the dangers of misuse.

Larry Lorenz
Texas A & M University

CONTOURS OF CHANGE, The Yearbook of Agriculture 1970. Washington, D. C.: U. S. Government Printing Office, 1970 $3.50.

The 1970 Yearbook of Agriculture examines the forces that are changing rural America. In a section entitled "County and City — One Nation," experts discuss such subjects as, "The Dying Town and Why Time Passed It By," "Tomorrow's Vision Saves Many of Today's Rural Communities," and "The Team Haul Community in a Jet Age." Your congressman may be able to furnish you a free copy. Every school should have at least one copy for the agriculture library.

# News to me

The fifth National Young Farmer Educational Institute will be held November 28-December 1 at Greenville, South Carolina. The Jack Tar Poinsett Hotel will be the site of the Institute.

Soil is now known to be, not a substance, or a mixture of useful chemicals, but a phenomenon of the utmost complexity, whose delicate balance is easily disturbed and whose complete interpretation is yet far off.

—*Paul B. Sears, DESERTS ON THE MARCH*

A fact often overlooked by our
population is farmers are cons
too. They buy most of the sam
ducts, and at the same retail
This part of agriculture's stor
been difficult to get across to the
—*New Holland News, Vol. 17,*

The farmer can be proud of his record of productivity. As a result of his efforts, the average American family spends only about 16.5% if its take home pay for food today, compared to 17% last year, and 22% twenty years ago.

Agriculture's ability to feed and clothe the 300 million people expected to inhabit the United States by the year 2000 can be assured only if the farmer receives an adequate income for the use of modern equipment and technology while meeting his labor costs.

—*New Holland News, Vol. 17, No. 1*

Food is one of the urban consu
biggest bargains. Those of us invo
in agriculture need to help get
story told. To understand agricult
problems in relation to their own,
urban neighbors need to look be
the price of food, to learn where
food came from before it was place
a can, and the how and why of its c

Cow business is the biggest piece of American agriculture. It uses more land, requires more feed, produces more market value of product, and is front and center at more American meals than any other livestock or crop.

—*Herrell DeGraff in BEEF PRODUCTION AND DISTRIBUTION*

Kansas State University professors Dr. R. J. Coleman and Dr. M. J. Riley report that agri-business firms with high growth rates were younger, used capital more effectively, changed technology more, and used more aggressive product policies. They reported less mental "fixedness" and a greater research for improved methods and new ideas. The business leaders could stretch their minds beyond the management of physical resources and current operating problems.

Almost every 'economy drive' conc
trates upon the 'high costs' of the fa
program in the Federal budget, a
totally overlooks the devastating i
pact of what is happening to farm
and their incomes upon unemployme
and inadequate growth throughout t
whole U.S. economy.

—*Leon H. Keyserling in AGRICULTUR
AND THE PUBLIC INTERES*