THE AGRICULTURAL EDUCATION MAGAZINE, August, 1966

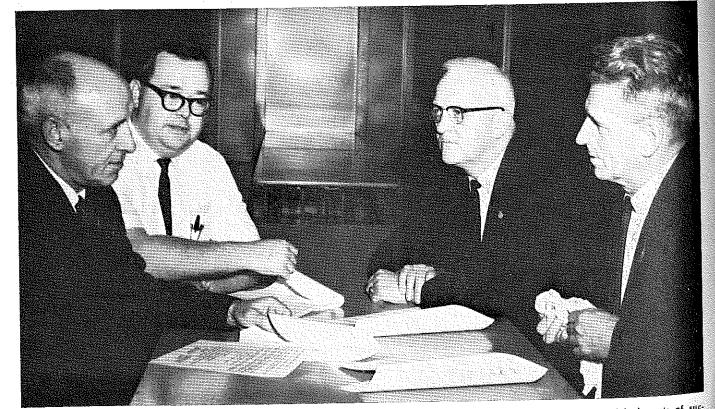
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Herbert Bruce, Jr.
Teacher Trainer Ag. Ed.
College of Education
University of Kentucky
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Stories in Pictures

GILBERT S. GUILER
OHIO STATE UNIVERSITY



Teachers in Montana Voc. Agr. departments take time for evaluation and planning of programs with students.



School Administrators and teachers of Voc. Agr. in Washington agreed that planning coordination and evaluation are essential elements of success in a multiple teacher department.

Agricultural... Education

Volume 39

September, 1966

Number 3



(picture story page 50)

Featuring SUPERVISED PRACTICE

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The Cover

Members of the Agricultural Occupations advisory committee at Batesburg-Leesville High School, South Carolina, are shown above as they discuss course outline and supervised practice programs in agricultural occupation training being conducted by the Vocational Agricultural Education Department at the school. Those in the picture include, left to right, Mrs. E. C. Ridgell, A. A. Murphy, vocational agricultural teacher; J. M. Crout, superintendent; Ellis L. Stockman, principal; and Leroy Cone. Photo-Chastain

Editorials

Supervised Practice or Occupational Experience?

Developing a new concept is the heart of the educational process. Sometimes the new concept may be up-dating an old concept. Some even suggest that all new concepts result from a new combination of old ideas. As indicated in these columns in recent months, we sometimes confuse concepts with definitions. That is, we say that we need a new definition when we may mean that we need to develop a new

Let's look more closely at the idea of a new concept being the up-dating of an old concept, as it might apply to the area of Supervised Practice. Apparently the idea of supervised practice as part of an educational program is sound from almost any viewpoint. There are many different ideas about the best way to go about securing this needed practice, but the requirement of laboratory, and many other variations of the idea of supervised practice seem to indicate a feeling of need for some "learning to do by doing." Interestingly enough, this concept holds very strongly for the arts as well as for the vocational areas of education.

In the case of vocational agriculture, the authors of the Smith-Hughes Act took no chances, but wrote the requirement for supervised practice right into the Act. ... that such schools shall provide for directed or supervised practice in agriculture, either on a farm provided for by the school or other farm, for at least six months per year . . . ". This concept was continued and up-dated in the Vocational Education Act of 1963 by amending the above as follows: ". . . any amounts allotted (or apportioned) under such titles, Act, or Acts for agriculture may be used for vocational education in any occupation involving knowledge and skills in agricultural subjects, whether or not such occupation involves work of the farm or of the farm home, and such education may be provided without directed or supervised practice on a farm . . . ".

Frequently, agreement is reached on an idea. The difficulty comes when we try to implement the idea. In the case of supervised practice, the Smith-Hughes Act clearly required "supervised practice in agriculture", but this was to be implemented "on a farm". The Vocational Education Act of 1963 continues the same old concept but clearly recognizes the new setting under which the idea of supervised practice in agriculture can now be implemented. That is why the "on a farm" requirement was dropped. Clearly, there is no intent to drop or decrease emphasis upon the need for "supervised practice in agriculture", as some seem to be reading into the 1963 Act.

The above is the basis for the argument that everyone enrolled in vocational agriculture should have a supervised practice program. Not just because the law says so, but it makes good sense educationally. In fact, we must keep before us the idea underlying supervised practice—the spirit if you will—rather than getting lost in a particular way of implementing the idea. For example, in the early days, the home farm became the focus of the supervised practice program, although the home farm was not mentioned by the writers of the Smith-Hughes Act. Because the home farm was a good place for some boys to operate their supervised practice program, we decided that was good for everybody. We followed this questionable logic to the point of having boys and teachers join in reporting all sorts of things in the name of a supervised farming program. We can make the same mistake in the broader field of agricultural occupations if we lose sight of the spirit of supervised practice.

It is to keep us close to the spirit of supervised practice in up-dating the old concept in these changing times, that I suggest that we might drop the term Supervised Practice" and adopt "Occupational Experience." The major reason being that Occupational Experience is a more descriptive term of the basic idea of concept that we want to continue than is the old term Supervised Practice. Furthermore, the old term is tied so closely to the earlier implementation in the form of Supervised Farming Program, until it makes it difficult to stretch the term to include

the many modern ways of securing occupational experience. You are invited to react to the suggestion that we substitute the term "Occupational Experience" for "Supervised Practice" in more effectively developing the spirit of "learning to do by doing" in all programs in vocational agriculture in the years ahead. A Letter to the Editor will be welcome, or you may wish to write a Guest Editorial on the subject, if you feel that the subject is worth our further consideration.



Theory and **Practice**

As advocated in the editorial at the left, I believe that emphasis on Occupational Experience will help us develop a modern concept of supervised practice. However, there is no magic to the term Occupational Experience, nor will the use of the term automatically result in desired educational outcomes. Bill Ballance, vo-ag teacher, and graduate student in one of my classes found a quotation from Aldous Huxley that he thought illustrated the key idea. "Experience is not what happens to a man. It is what a man does with what happens to him." This may also be a hint as to how to evaluate Occupational Experiences.

We need to give our best thinking to the establishment of the proposed Instructional Areas related to clusters of occupations. If these areas are to serve occupational objectives, the relationship must be clear. At the same time, assigning a specific occupational objective to every teenager enrolled in high school classes is simply asking for trouble in the follow-up. We must develop a program whereby students are enrolled for realistic occupational objectives for them at the time of enrollment, not in terms of the occupation in which they may be engaged 15 years later.

A number of psychologists have joined the ranks of those asking for vocational education, and other "non-verbal" programs for all high school students. The argument is that the "college-bound" and other academically talented need such courses to give balance to their high school education. Herbert Klausmeier, psychologist, University of Wisconsin, makes these and other points in a recent article. He defends the idea of requiring work for credit in the vocational or nonverbal arts as part of the liberal education of all students. This follows the basic idea that there is value in learning to do; part of this, at least, is learning more about yourself through work.

(continued, page 52)

Cavce Scarborough

Just about the most optimistic outlook on farming as well as other areas of agriculture that I have seen in a long time was an article by True D. Morse in the Spring issue of Plant Food Review. If you haven't seen it you will want to read and think about this article. Mr. Morse makes 16 points, some of them pretty tough, and closes with the following: "Some say 'BOOM AHEAD'-but perhaps the prediction of a 'Golden Age' for agriculture more nearly describes what can be expected for the future."

Someone suggested that we kid nobody except ourselves when we talk about all of the changes we are making, even to the point of having national committees make recommendations, and only make a few minor changes in the wording of some sentences here and there. This is no criticism of the many people who take time from their busy schedules and go to Washington, or some other place, and work on these national "study" (?) committees. Unless major issues, including underlying premises, can be examined and change considered, then it is not likely that much real change will result. Someone has suggested that if you really want to get down to bedrock in talking about objectives of a program, then you must ask the Number 1 question, namely, "Is this program really necessary?" I doubt if many study committees have had this question included in their charge.

Speaking of objectives, E. R. Ryden, University of Maryland, suggests that we need to state objectives in terms less subject to wide interpretations than is usually done. To test this idea, he suggests that you describe the behavior of a person if he has accomplished the objective. For example, probably the most common term used in stating objectives is, "To understand" Well, following Professor Ryden's suggestion, if a person reaches this objective, how does he behave? How does he prove that he understands? How does he differ now that he understands? Yes, that's pretty hard doctrine that Professor Ryden is preaching. I doubt if some of us can join his congregation!

How did you like the new format for the new volume of AgEd Mag beginning in July? By using heavier paper and mailing flat, we hope that the magazine gets to you in better shape each month. Let us hear from you.

See you next month.

Cayce Scarborough

GUEST EDITORIAL-

The Vocational Education Act Of 1963 Vision Or Mirage?

ALFRED H. KREBS, Teacher Education, Univ. of Maryland

The Vocational Education Act of 1963 is really a vision; it is a vision of things being done that need to be done. It is a recognition of the many problems facing this country, some of which can be solved by sound educational programs. Unless we are alert, however, the vision may turn out to be a mirage.

The "why" of the Act is a mixture of things for which vocational education is held responsible and evidences of its value. In Illinois, for a recent year, only 3,4 percent of high school vocational program graduates and dropouts combined remained unemployed as of October of the year of leaving school. The comparable percentages of 11 percent (graduates) and 17 percent (dropouts) for all students in the nation are well known. The American Institute for Research nationwide study of vocational graduates revealed, not surprisingly, that as compared to nonvocational graduates the vocational graduates got jobs more quickly, had more employment security, and had similar conversational interests, leisure-time activities and affiliations with community organizations. Vocational education is held responsible for the general problem of youth unprepared for work, yet only five percent of high school graduates complete a vocational program and nearly three-fourths of a vocational student's program consists of general education courses. It would appear that vocational education has not failed; rather, society has failed to provide enough vocational education.

The Vocational Education Act of 1963 was designed to correct the failure of society to provide adequate vocational education by making it possible to broaden existing programs and to develop new programs so that persons of all ages, abilities and interests could be served. This vision may be only a mirage. This country is still not ready for an honest effort to provide the kind of educational program needed by its citizens.

The broadening of vocational programs in many areas is proceding slowly or not at all. New programs and approaches to vocational education await a hearing while the energies of many vocational educators are expended either in attempting to re-shuffle present programs into some yet unrecognizable pattern or in opposing the reshuffling.

Vocational educators in one subject area publicly promote the elimination of vocational programs in other subject areas.

Curative programs for adults under a variety of public and private agencies are paid for by the federal government through such acts as the Area Redevelopment Act, the Manpower Act, the Trade Expansion Act, and the Economic Opportunity Act. Why should a local school pay for programs for youth that the federal government will later provide free for adults? Even the recent massive federal aid to general education may make it possible for a school to get more federal aid by expanding general education than by expanding vocational education.

People generally appear unwilling to give up having secondary education programs planned first for the college bound. With college as an almost compulsive universal goal of Americans, the 80 percent of youth who will not be graduated from a four-year college still must struggle to achieve in courses planned for the other 20 percent. Time does not permit enrollment in vocational courses.

The problems are legion. It should be obvious to all that the civil war inside vocational ranks and the failure of vocational educators to create new programs can lead only to the development of even more vocational education programs outside the public schools.

If we really want:

1. More vocational programs in the public schools 2. A greater variety of kinds of vocational education programs

3. All students to be able to take some vocational courses 4. To help reduce unemployment through vocational education

5. To help discover, through vocational education, the kind of genius whose creative talents are not revealed by present college entrance oriented programs
6. To give a new richness and meaning to the education of all students through

vocational education

7. To help each student develop, through vocational education, qualities of citizenship, appreciation of work, and respect for all fellow human beings— (continued, page 53)

For First Time—

Now Every Vo-Ag Student Learns Through Supervised Practice

JOHN W. ALLISON, Instructor, South Rowan High School, China Grove, North Carolina

For the first time, in 18 years of teaching vo-ag, we can reach all students enfolled in vocational agriculture by varied supervised practices in agriculture. Our students are developing more skills and earning more money than any other period of time since the development of vo-ag Upon completion of high school, our students are ready to become established in a specialized segment of farming, either some agricultural business or pursue additional education thru a technical institute or university.

Out of 113 students enrolled in vo-ag we have 55 engaged in work experiences away from their homes. These work experiences include work on highly specialized horticultural farms, dairy farms, general farms and produce markets.

We consider the experience on our horticultural farms to be the best organized. Our FFA chapter has entered in an agreement with several large producers to furnish the necessary labor over a 5month period. We think this offers balanced experience as the boys follow tomato farming from the greenhouse to the field and then to market, gaining skills thru greenhouse practices, cultural practices in the field, harvesting and marketing.

Our boys realize they are being graded by the farm manager as well as the teacher of agriculture. Systematic raises in pay when earned get a good effort from all of the students. As students get more experience and exhibit proven leadership, they are used as field



53

J. W. Allison

supervisors to direct fellow workers.

Financially our work experience students do better than production supervised practice. The students are paid on an hourly rate of pay plus production bonuses. The pay runs from \$350 to \$800 over a 5-month period. Many of our students are using these funds to get more education upon completion of high

Planning Supervised Practice Programs

F. R. McCREARY, Teacher of Vo Ag, Monroeville, Alabama

We are experiencing possibly more changes in vocational agriculture during the flive years prior to our fiftieth anniversary than occurred in the first fortyfive years of vocational agriculture.

Prior to these last five years, most of the changes have been in methods and materials. Now we are faced with changes in basic concepts and each teacher of vocational agriculture has the responsibility of keeping himself mentally capable to cope with the necessary

In the past we have been able to point to the "Smith-Hughes Act" and state that for the state, county, and other educational units to be reimbursed, it was absolutely necessary that each student

must successfully complete a wellrounded supervised practice program. With this as a stimulus, we were able to usually get a respectable-appearing supervised practice program for our students.

Specialization vs Diversification

During the life of vocational agriculture we have seen diversification give way to specialized production agriculture. This in itself has brought about a change in that the teacher can no longer measure the success of the all-day student's supervised practice program by the number of different kinds of projects carried out by a given student. The economics involved in a diversified farming

program in most areas is forcing those engaged in production agriculture to specialize. Along with the gradual change in specialized production, we find that now we have a definite responsibility in preparing our youth for processing, distributing, and service occupations that are related to agriculture.

F. R. McCreary

Learning to Do & Doing Still Sound

We, in vocational agriculture, stand firmly on the theory that learning is taking place with students when carried through to the doing stage. With specialized production, specialized processing, specialized distribution, we are faced with a challenge in working with students in developing a meaningful supervised practice program. The problem of helping the student who is in production agriculture and desires to continue, will be, as in the past, a matter of guiding him into the best enterprise choice from an economical and interest view point.

(continued, page 54)

Alfred Krebs. (continued from page 52)

Then, we must:

1. Work to broaden existing programs.

2. Design, or redesign, programs to meet the special needs of youth and adults of

all ages.
3. Study the possibilities of developing vocational programs in many additional

subject-matter areas. 4. Support the development of area school and post-high school programs with

continuation programs in all subject-matter areas. Work together, as vocational educators, to strengthen all of vocational education A broad, imaginative effort on the part of all vocational educators is needed. Trying to solve the problems of the nation and of vocational education by reshuffling present vocational programs into some new pattern and covering it with a new coat of paint may be hazardous. When we finally take time to look at what is supporting the new coat of paint, we may find we have destroyed what we had and have nothing of substance to replace it—and the vision of vocational education

for all the citizens of our country will have indeed become a mirage.

F. R. McCreary

(continued from page 53)

For the student who does not come from the farm and whose vocational ambitions lead him to production agriculture, there are work experiences available on farms and ranches. Most of this type experience is seasonal but does give vocational agriculture much more meaning than a backyard plot would. The seasonal jobs that are available to the student, in addition to on-campus experiences that are available, would furnish some needed vocational training in production agriculture.

Some departments of vocational agriculture have rather elaborate facilities where students carry out supervised practices on-campus and this gives the student much needed experience in given areas. This, of course, would not take precedence over the boy with facilities for training at home in a productive phase of his choice.

Student Needs Come First

For a department of vocational agriculture to meet the needs of each student we must utilize the community to gain work experiences in areas that are needed for students pursuing courses in processing, distribution, and service occupations. The business employing persons in the agriculture related field is constantly seeking more efficient employees and we can expect these people to be vitally interested in young men conscientiously preparing themselves to be better trained in their future vocation. We can look to these business firms to allow opportunities for student on-the-job training. We, as teachers, will play a vital roll in determining the successfulness of the job experience.

Many basic projects in the areas of lawn, orchard, ornamental horticulture, truck crops, and many others, can be carried out at home by the student with limited facilities, gaining invaluable experience, under the supervision of his teacher, in these areas. The needed experiences to supplement the other phases of the instructional program can be gained on limited space.

Summary

In summary, we have many opportunities for helping the student get started with a worthwhile supervised practice program and with a constant alertness for opportunities in work experience in agriculture and related fields, it is felt that the supervised practice program must be fitted to the student rather than the sudent conforming to a preconceived plan called a Supervised Practice Program.

Vocational Education Can Meet Special Needs of Youth

JOHN L. O'BRIAN, Teacher Education, Rutgers University

It is suggested that we have not met one of the major needs for vocational education, that of youth with special needs. In spite of the fact that meeting these needs is a mandate of the Vocational Act of 1963. The writer suggests that it is a difficult jub but can be met with special effort, but needs extra training for teachers.

One of the glaring unmet needs of vocational education is to provide educational programs for youth with special needs. With the passage of the Vocational Education Act of 1963 it became possible to offer reimbursable programs for these youth. Section 4 (a) (4) of the Act states that it is possible to offer "Vocational education for persons who have academic, socioeconomic, or other handicaps that prevent them from succeeding in the regular vocational educational programs." Section 4 (c) of the Act also relates to programs for youth with special needs. Section 4 (c) states . . . "Ten percent of the sums appropri-

... "Ten percent of the sums appropriated shall be used by the Commissioner to make grants to colleges and universities, other public or non-profit private agencies and institutions, to State Boards and local educational agencies to pay part of the cost of research and training programs and of experimental, developmental, or pilot programs developed and designed to meet the special vocational education needs of youth, particularly youth in economically depressed communities who have academic, socioeconomic, or other handicaps that prevent them from succeeding in the regular vocational education programs."

The Youth With Special Needs

The youth with special needs constitute a sizeable portion of our school population. All youth with special needs do not possess the same portfolio, they are heterogeneous in many respects. However, they do possess a number of common characteristics and experience a number of similar environmental situations.

They may come from poverty stricken homes.

They may have poor educational backgrounds.

They may be undernourished or in poor health.

Their parents (or parent, often only the mother is present in the home) hold unskilled or semiskilled jobs. They may be dependent upon social agencies to provide them with basic

They may be members of minority ethnic groups, such as the Negro or Puerto Rican.

They may come from areas such as Appalachia.

They may have physical or mental disabilities.

They may not be highly motivated (lack achievement motivation).
They may be culturally deprived.

Tuckman (1965) discussed what it meant to be culturally deprived in a paper given at a colloquium at Rutgers University. Being culturally deprived very often means being biologically deprived: that is, being hungry, underclothed, and in need of medical and dental treatment. Hunger (lack of proper nutrition) affects growth, mental performance, attitudes, and behavior The culturally deprived often score low on intelligence tests because they have less of their intelligence potential developed than those who do not suffer from cultural deprivation. In evaluating the student's abilities, the I.O. score should not be taken as absolute. There is sufficient evidence to indicate that I.O. tests do not measure the intellectual potential of a disadvantaged youngster, according to Kemp (1965). As a group there is an absence of achievement motivation among these youth and they often have a low selfimage of themselves, their peers, and their family. The culturally disadvantaged do not receive a great share of material things; as a result, they some times develop a negative, cynical, fatalistic, and simple view of the world, and often act in an asocial fashion. There are instances when this attitude shows up in the classroom since the classroom is a miniaturization of society and the teacher a representative authority.

The Programs Needed

These characteristics are not common to all the youth with special needs, and they are applicable in varying degrees when they do apply. The realization that these characteristics apply in general, however, does have implications for the educational program, teacher competencies, and the teacher training program.

The Educational Program

The need for specially designed educational programs to prepare this segment of our population for useful and productive lives, for teachers with competencies to work effectively with these (continued, page 56)

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THE AGRICULTURAL EDUCATION MAGAZINE, September, 1966

Group Vocational Agriculture Projects

VERNON V. LUTHER, Vo Ag Teacher, Neponset, Illinois

When the vocational agriculture education idea was conceived some 40 years ago, the idea of productive projects was first rate for students. There were many farms of small size and it was a good idea to learn and to earn to get started in farming. This idea is still a good one and basic to getting started in farming—even if the stakes for starting are higher. However, if we are to continue educating our share of the youth today for the agriculture industry, both farm and urban, we will have to analyze our thinking about requirements. This is where the group project idea may be of value.

What Are Group Projects?

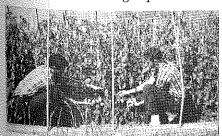
If you have taught very long you probably have used a variety of the five types of projects we normally have: Crop, Livestock, Shop, Improvement, and Skill. I like to use them separately for teaching units.

Crop projects are best if they can be readily turned into cash and are adapted to the area. Since 1949 the Neponset Vocational Agriculture Department has controlled varying amounts of land up to 80 acres for crop projects. It has basically a group project for all classes with most of the finances, including ownership of machines, controlled by the FFA. Demonstration work is done on class time and non-farm students often do the surplus work after school and on Saturday, and are paid for their labor. Most of the harvesting is done on a custom basis.

On other occasions we have non-farm student groups control an individual crop project. After paying expenses to the FFA, they receive the profit, if any.

Livestock projects require some supervision, more investment, and more risk. I recommend that they be small for these reasons. I like to manage these similar to crop projects, usually using non-farm freshmen students for the labor. They receive the profits for their labor. Any losses are absorbed by the FFA fund.

Shop projects have been used for years by many teachers for group instruction.



Inspecting tomatoes in greenhouse for insects and diseases. Part of the work experience program.

For example, a farmer may provide the lumber for a dozen portable hog houses and you can use the whole class to build them. Sometimes it is learning only, other times some payment is made for the labor. We have occasionally bought materials to build farm equipment to sell, such as gates and feeders. Last year we use our Junior class to build 3 trailers for sale. Profits or losses in these cases go to the Vocational Agriculture fund or the FFA. Sometimes the profit is spent for an outing for the class involved. Group shop projects are easiest to conduct because the facilities are centralized near school and readily adapt to organized instruction.

Improvement projects, often a community service, are easy to find and to use for demonstration and education. They usually do not provide a source of income unless it is a donation or a charge for labor and machines. Some that I have used through the years are: Farmstead beautification, soil conservation, repainting tractors, lawn landscaping, swine testing, corn yield program, and soil testing clinic.

Agriculture skills are many, and often times are done on a group basis. For example, we like to use the whole class when plowing a field, or planting corn. It is desirable to have at least one pig for each student for castration; each person should test corn for moisture, etc. I would believe that much of our vocational teaching of skills is done on a group basis by many teachers in the classroom, shop or farm.

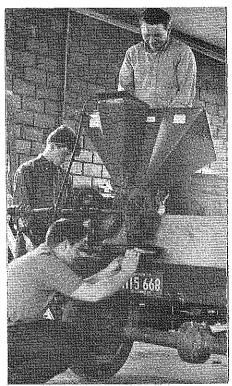


The Group corn project provides opportunity for learning to grow a crop, to work, to keep records, and to make a profit.

What Advantages Appear in Group Projects?

1. The educational needs in agriculture for more students can be met by all sharing the experiences with the project.

 They provide an education laboratory for the increased need for vocational agriculture instruction to non-farm boys interested in agricultural occupations.



Repair and calibrate a seeder was a group project for developing skills.

- 3. Students develop an interest when all can work and share in the profits of the project.
- 4. With larger farm units and specialzation, many farm boys cannot have a project program that provides a complete source for agriculture training.
- 5. Heavy school loads, plus a shortage of farm labor has placed a premium on the student's time. Too many times the boy's hogs are mixed with his father's hogs, are fed from the same crib, and paid in the same check!
- 6. The teacher can control the group project and supervise it better. Financial and production records will be more accurate as they will be checked and controlled by the teacher more thoroughly.
- 7. The teacher can organize a more definite course instruction around group projects. He can make a more effective use of teaching time during the day and doesn't need to interfere with the farm family life after working hours.

I do not recommend that the individual farming project program be discontinued, but feel that the requirement for each student to have one is antique. Perhaps our school systems should provide a farm training center just as they provide athletic or science training departments. We need to train youth in many phases of agriculture.

John L. O'Brian

(continued from page 54)

youth, and for teacher training programs to prepare these teachers can be supported by statistics reporting the high dropout rate and the large numbers between the ages of sixteen and twentyone who are neither in school nor employed. This fact is also borne out by the reality of Job Corps programs, the skill development centers existing under the aegis of the Manpower Development and Training Act, and by the approval for residential schools under the Vocational Education Act of 1963. What then constitutes a viable educational program for these youth at the high school level?

A program for the youth with special needs must begin with the student's attained level of achievement and start building from this point. The program must provide these culturally starved youngsters with experiences which will broaden their intellectual horizons. Programs such as the Great Cities School Improvement Program of Detroit, and the BRIDGE Project of Queens College are examples of what is meant-programs that amplify background experiences so that learning can take place. The program or curriculum should be comprised of two main considerations-the skill development aspect and the supporting programs.

The Skill Development Program

The skill development aspect of the program should provide the student with numerous saleable skills in several job families. These skills should be of varying levels but many, of necessity, will be low level in nature. The urgency for this can be visualized when one thinks of the achievement level attained by these youth; the number that will not have the innate intelligence or mechanical aptitude to pursue higher level occupations; and the need for immediate gratification on the part of the learner; therefore, their interest is in skill training that can be accomplished in terms of months and not years. There must also be opportunity for the student to move up the educational ladder and engage in the study of skilled and technical level occupations providing he has the aptitudes needed and has achieved an educational background required for this study. As envisioned, the school program should constitute a number of job families, e.g., manufacturing, construction trades, medical and health, distribution, transportation, service industries, etc. Within each job family the student would have the opportunity to learn numerous skills. In a typical high school career the student would gain written communication. This activity, as

experience in a number of job families. Emphasis should be placed on those occupations that will be least susceptible to obsolescence due to technological development. The Carrollton School, Baltimore, Maryland, and the Dayton, Ohio schools embrace many of the concepts enumerated above. Provision should be made for the student to experience a pre-vocational phase so that he can select areas of study in line with interests

It is important that persons who will work at low level jobs must have as many facets to their employable personality as possible. It can be expected that they will change jobs a number of times during their lifetime. Most of these job moves will be horizontal and not vertical in nature. In all probability the jobs will not be related. Experience in a variety of job learning situations can give them greater chance to obtain their first entry level job as well as confidence to take on a new job when necessity

A final aspect of the skill development program should be a cooperative work program. For the disadvantaged this can serve many purposes. It can provide entree to the world of work, needed income making it possible to remain in school, and status in the family as well as in the peer group.

The Supporting Program

The supporting program is as important, if not more so, than the skill development program. It is with this aspect of their school life that the youth with special needs have experienced failure and frustration time and time again. It is this aspect of the educational program that is basic to future development and ability to learn new skills and to adapt to new situations. Experience with manpower programs has shown that lack of supporting skills (basic tool subjects) has been a detriment to skill development. As a result, the Manpower Development and Training Act was amended making it possible for trainees to receive instruction in the basic tool subjects, to be followed by skill training programs. This experience is valuable to those working with disadvantaged youth. Initially these youth may be limited to low level skill development programs. However, as they progress in the supporting program it may become possible for them to progress to higher level skill development programs.

The supporting program must be approached with vision and taught with enlightenment. Generally, there is need for development of communication skills -reading, oral communication, and

with many aspects of the program, must be related to practical needs. In a realistic sense the supporting program must show how it relates to job preparation This is an immediate gratification and reinforcement that is needed. Mathematics, social studies, occupational information, and guidance constitute the bulk of the remainder of the supporting program. Mathematics should be of the type necessary to everyday living and to the successful performance in the occupations being pursued. Social studies should include experiences that prepare for understanding of the operation of a government-controlled by a middle class people—the majority culture, In addition, units such as those taught in the Carollton School of Baltimore should be included. Social studies in this program include units on government. driver education, public health services, adult education, elementary economics. and legal aid. As mentioned earlier, an important aspect of the program is to provide these culturally deprived youngsters with experiences which will broaden their intellectual horizons-programs that will amplify background experiences so that learning can take place.

The Teacher Training Program

Guidance is a key to the success of any program dealing with the youth with special needs. The old adage that every teacher is a guidance counselor holds particularly true in this instance. This does not detract in any manner from the role of the guidance counselor, it does, in fact, expand his effectiveness.

The teacher of the youth with special needs must possess all the attributes of the good teacher, but he needs more than this. He must be able to communicate at the trainee level, he must be a social worker, a psychologist, a parent substitute, an adult model, and a friend. He must care enough to discipline, be flexible yet firm, have patience but be persistent, be empathetic but not sympathetic, and be able to teach and be taught (Springer, 1966). He must work with youth who are insecure, pessimistic, dejected, angry, undereducated, nonmotivated, hungry, ill, delinquent, resentful toward authority, potential dropouts, have limited mental ability, are beset with physical disabilities, have little regard for the value of education, and yet they may realize that such a program could represent a last hope for them as far as the public schools are

The teacher training program that sets as its goal the preparing of teachers to work with these youth undertakes an ambitious goal. Haubrick (1963) says it

(continued, page 57)

John L. O'Brian (continued from page 54)

THE AGRICULTURAL EDUCATION MAGAZINE, September, 1966

is the quality of the teacher, his professionalism, and the leadership he provides that make the difference. The curriculum, while important, is secondary to the teacher. In his constant association with the student it is the teacher who must put forth the effort to meet, understand, and solve the problems that arise daily. Frank Riessman (1962) also states the case for specialist teachers of disadvantaged youth. A question, then, that must be answered is: What constitutes a viable teacher training program for teachers of youth with special needs?

An axiom that should not need justification is that the teacher must be able to communicate with his students. He must be able to understand the frame of reference upon which the student bases his sense of values, his mores, his sense of morality, and ethics—his sense of right and wrong or his everyday reasoning. To be able to do this the teacher of the youth with special needs must have a well rounded background in the behavoral sciences with emphasis on the culture and the world of the youth with special

The student spends almost all of his school hours with his teachers. He will spend a greater amount of time with his skill development teacher than with any other teacher, and in a less structured environment. This provides an excellent opportunity for guidance. Every teacher working with these youth needs to develop a philosophy of guidance that is appropriate; he must be able to understand and appraise individual and group behavior; understand, interpret and use standardized tests; possess techniques contributing to the development of student self-understanding, self-acceptance, and self-reliance. He needs to be skilled in the development and use of group learning experiences for his students. Guidance cannot be left to the counselor alone, it is far too important for such inconsequential consideration.

The youth with special needs has demonstrated his inability to accept and/or level, especially in reading and mathematics. Methods that are appropriate for succeed in the traditional school program. Generally his achievement level is below norm for his age and grade level, especially in reading and mathematics. Methods that are appropriate for the majority of students have not been appropriate for him. Many are nonverbal. The teacher working with these youth needs to be skilled in other than verbal methods. Some of the techniques used by special education will be appropriate in this case. It is well known that the disadvantaged have low self-esteem

Themes for the Agricultural Education Magazine

December-

COLLEGE PROGRAMS FOR PROSPECTIVE TEACHERS

Do we have a Model T or 1967 Model Program? What are the major objectives of the undergraduate program? Are these objectives consistent with the demands placed upon the beginning teacher? What responsibility do we have for the student going into other agricultural education positions? Recruiting. Needed guidelines. Needed research. Implications from other areas of teacher education.

January-

GRADUATE STUDY

Need. Opportunities. Role of graduate study in professional improvement of teachers, supervisors and teacher educators. What is the present graduate status of personnel in Agricultural Education? Areas of graduate study now being pursued by students at master's and doctoral levels. Full-time vs parttime graduate study. Outlook.

February-

RESPONDING TO CHANGING NEEDS IN AGRICULTURE AND EDUCATION

How well are we responding to changes in agricultural and educational situations? Basis for change. Are we aware of basic and fundamental changes such as population shifts, socio-economic changes, changing expectations of people, and outlook? A close look at research on innovation and acceptance of new concepts by teachers, supervisors and teacher educators.

and are low in achievement motivation. Teachers must become skilled in changing these attitudes. In any event, a program for teachers of the youth with special needs must be cognizant of the need for study in pedagogy and educational psychology as related to the youth with special needs.

Vicarious experiences, no matter how well planned or simulated, cannot replace actual experience. Those responsible for developing programs of this type should consider the externship or other field experiences as a vital aspect of the teacher training program. This is a well accepted concept. Schoous such as Yeshiva University, Hunter College, City University of New York, California State College, Mercy College, Coppin State College, Morgan State College, and Towson State College do include such experiences in their teacher training program for the disadvantaged youth.

An individual who has an over-all view of the organization in which he works is more likely to contribute to the success of the organization than one who does not have such a perspective. It is important that the teacher of the youth with special needs has some conception of the total program of which he is part. He should understand his own role and the roles of his colleagues. He should understand the contribution that all parts make in effectively meeting the needs of those entrusted to the program. To this end it seems advisable that there should be included a course dealing with the curriculum.

Conclusion

Teachers of the youth with special needs will perhaps have to be taken from the ranks of our most skilled educators. They must have a desire to work with students who have great problems in and out of school. The teacher training program porposed should be on a post-baccalaureate degree level. The competencies described will be essential in addition to those needed by teachers in traditional programs. These competencies should not be included in a teacher training program "in place of" other courses, but supplemental to these experiences.

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Instructional Materials For A Gasoline Engine Unit

THOMAS HOERNER, Pennsylvania State University,

RUSSELL JOHNSON, Iowa State University

(NOTE: This article is based on information collected by the authors and on the authors' combined experiences of four years of teaching high school vocational agriculture and six years of teaching in the Agricultural Engineering Department at Iowa State University.)

Does your agricultural mechanics program include a unit on small gasoline engines? One logical way of introducing the farm power and machinery program is through instruction in maintenance and repair of small gasoline engines. An understanding of the basic fundamentals of engine operation is quickly obtained by the student through working on small gasoline engines. Boys at this age are interested in engines and are highly motivated when working with this unit.

The small engine makes an excellent teaching aid because of its simplicity and size. The procedure for maintenance and repair can be mastered in the agricultural mechanics laboratory with little space and a minimum number of tools. It is fairly simple for these fundamentals and procedures to be related and applied to large engine maintenance and repair once they have been mastered through this unit. It is the teacher's responsibility to combine engines, tools, and reference materials with classroom study and well organized laboratory work.

As you plan for this unit in your program a number of questions will confront you, such as: (1) what materials will be needed for effective teaching? (2) what type and how many engines? (3) what tools should be available? and (4) what references are recommended?

Recommendations

Following are some recommendations which can be used as guidelines in choosing items and materials to have available for a teaching unit on small gasoline engines. It is recommended that one engine be available for each two students in the agricultural mechanics class studying this unit. The following characteristics should be considered in selecting engines for this unit:

- A. 1 cylinder, 4 cycle engines
- B. aluminum bore
- C. rewind starter
- D. horizontal crankshaft
- E. float carburetor
- F. air vane governor
- G. standard bearing H. 2"-2.5" cylinder bore

- I. 1.5"-2" stroke
- 6.5"-8" displacement.

An individual plywood storage unit as illustrated in Figure 1 should be provided for each engine. This will keep the engine clean and orderly. It will also serve as a storage unit for parts when working on the engine. A permanent base board on each engine as shown in Figure 2 is needed to lock the engine to the base of the storage unit (note-bolt and wing nut) and can be used with a Cclamp to hold the engine to the workbench while starting.

A complete set of hand tools for disassembly and assembly as listed below should be available with each engine.

- A. 1-4" diagonal cutting pliers
- B. 1-4" needle nose pliers
- C. 1-6" adjustable crescent wrench
- D. 1-13/16" spark plug wrench
- E. 1-spark plug wrench handle
- F. 1-5" standard screwdriver
- G. 1-5" phillips screwdriver
- H. 1-10"-3/8" drive flex handle I. 1 each-3/" drive-7/16", 1/2"
- and 9/16" sockets
- J. 1-6"-3/8" drive extension
- K. 1-6" cross bar for flex handle L. 1-9-leaf thickness gauge .001" to
- M. 1 spark plug gauge .022" to .040"

The tools are stored in a 3/4" plywood tray which slides in and out on 1" x 1" slides at the top of each engine storage unit as illustrated in Figure 1. The tray is two 3/" pieces of plywood 12-1/2" x 17" glued and nailed together The top piece of plywood has tool silhouettes cut out so that each tool will stay in place. (Note Figure 3)

In addition to the basic tools with each engine, a number of special tools are needed to adequately teach this unit. A worksheet in which the students use the micrometer to measure the engine bore, the length of stroke, crankshaft diameter, and various other engine measurements is a must for effective understanding of the principles involved in engine operation.

One each of the tools below is recommended for each 2 engines or one tool should be available for each 4 students in the class.

- A. Micrometer 2" to 3" range
- B. Telescoping inside gauge 2" to 3" range
- C. Depth gauge 0-6" range
- D. Outside calipers 4"
- E. Inside calipers 4"
- F. Speed indicator
- G. Piston ring expander (squeeze jaw
- H. Ring compressor 1.5" to 3" diameter
- I. Torque wrench 3/8" drive 0-150 ft.-lbs.
- I. Valve spring compressor (for small engine)
- K. Flywheel holder (as recommended for engine model)

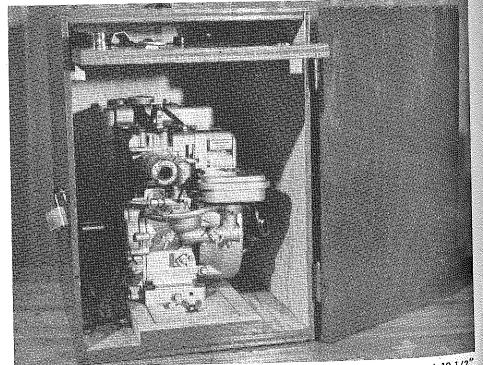
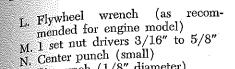


Figure 1. Storage unit for gasoline engine. The storage unit is 18" deep, 14" wide, and 19-1/2" high, outside dimensions.



O. Pin punch (1/8" diameter) P. Hammer (plastic face)

Q. Offset screwdriver

Once the students have mastered the disassembly and assembly of the small engine and have an understanding of the operating principles, they should be given time as part of this agricultural mechanics unit to work on engines from their home farms.

If engine repair and maintenance is going to be done in conjunction with this unit, one each of the following tools should be available for the student's use. A. Micrometer 1"—2" range

- B. 1 set inside micrometer 2"-8"
- G. Wheel puller—3 arms, 5"-6" reach D. Carbon scraper
- E. Ring groove cleaner 2"-5" di-
- F. Valve seat reamer or refacer (small engine)
- G. Valve grinder, hand 2"-4" range
- H. Cylinder wall glaze breaker
- I. Point file
- I, 1 set screw extractors
- K Ignition wrench set 13/64"-3/8"

Materials Needed

Many good instructional materials are available to aid instruction in small gasoline engines. It is advisable to have a complete set of manuals for the engines which you purchase and a repair manual for other more common engines which the students may be overhauling. Many books are published on engine service and some of these should be made available as references. Many of the commercial companies publish and distribute information in the form of booklets or manuals. Slides and flip charts can also be obtained for use in teaching this unit. The following are reference materials and the number of copies recommended for a class of 16 students.

A. 4-H Small Engine Project—Unit three, Iowa State University, \$.71. Student Manual. (16)

B. 4-H Small Engine Project. Leaders Guide. Iowa State University. \$.89. (1)

C. Small Gasoline Engine-Stephenson. Delmar Publishers. \$3.12. Booklet. (4)

D. All about Small Gas Engines—Purvis. Goodheart-Wilcox. \$4.50. Book. (4)

E. Farm Tractors. Engineering Bulletin No. FT535. American Oil Company, \$1.00. Booklet. (8)

F. Small engines Service Manual-7th Edition. Technical Publications, Inc. \$4.65 (1)

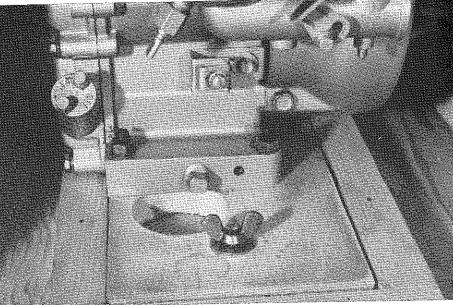


Figure. 2. Permanent base board illustrating oil drain hole and wing nut and bolt used to lock engine to base of storage unit.

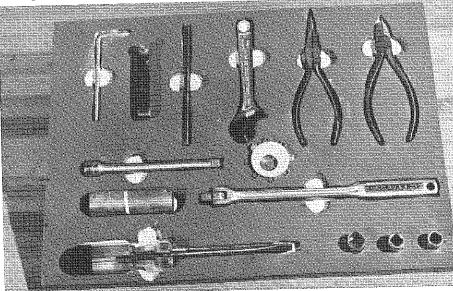


Figure. 3. Tool storage tray for basic tools.

G. Tractor Maintenance, Principles and Procedures. Sou. Ass'n. Agr. Eng. and Voc. Ag. \$3.25. Booklet.

H. Tractor Operation and Daily Care. Sou. Ass'n. Agr. Eng. and Voc. Ag. \$2.00. Booklet. (1)

I. General Theories of Operation. Briggs & Stratton Corp. \$.25. Booklet. (8)

Repair Instruction Manual. Consult engine manufacturer for manuals for respective engines.

K. À Power Primer. General Motors Corp. Detroit, Mich. Free (16)

L. Know Your Carburetor. Gumout Division. Pennsylvania Refining Company. Cleveland, Ohio. Free.

M. Complete Overhaul-68 Slides.

Briggs & Stratton Corp. \$6.80. (1) N. Flip Charts. Briggs & Stratton Corp. \$5.00 per set. (1)

The gasoline engine plays a very important role in the ever-changing field of agriculture. The teaching of the principles of operation, repair, and maintenance of the gasoline engine is by no means limited to the student who is going to farm. This unit may prove to be even more beneficial to the student who is training to work in one of our many related fields of agriculture. In many schools you, the vocational agriculture teacher, are best trained and will be called upon to teach this unit.

These recommendations should aid you in planning and making this unit in small gasoline engines an integral part of your total agricultural mechanics program.

GEORGE S. WILLIAMS, Vo-Ag Teacher, Andalusia, Ala.

A new approach to work experience programs for vo-ag students is not only urgent but essential to the present role of vocational agriculture. As the population shift from farm to urban areas continues, the number of non-farm students enrolling in vo-ag classes continues to increase. It is generally agreed that the traditional type supervised farm programs too often fail to provide for the needs of this segment of vo-ag students. Since many of these students will benefit from studies in vocational agriculture, ways and means to provide work experiences must be provided.

Our school is a typical case where this problem is acute. It is a three year senior high school in a city of 200,000. It serves both city and rural students. The vo-ag department is a two teacher unit with 132 students.* More than three-fourths of the vo-ag students list a city address. Most of this group lack home facilities for conducting the old type supervised farm programs and many do not need the type work experiences found in a program of productive home projects.

In searching for a solution to the local problem, the traditional type supervised farm program has been retained on an optional basis. It is recommended for most on-farm students and for others interested in productive agriculture. For this group of students it has provided the first business venture and led to farm establishment of too many to be discarded.

At School

It was quickly realized that the school, rather than the home or farm, must provide facilities for work experiences to most off-farm students. Accordingly, several programs are being explored.

A cooperative show calf project was sponsored for the past two years. A vacant dairy barn was located and converted into a feed lot. Each member of the coop shared alike in cost, returns and feeding, fitting and showing responsibilities. This venture provided work experiences for vo-ag students in beef cattle production who totally lacked home facilities for such projects.

*W. C. Locke teaches animal science and livestock enterprises. Geo. S. Williams teacher of plant science and horticulture was at Sidney Lanier High School, Montgomery, Alabama when this article was written, is now at Andalusia, Alabama.

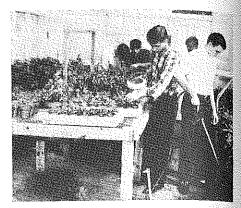
This project has been modified to include several small groups rather than a single large group. The change provides for more individual responsibility and work experiences.

Greenhouse Valuable

A campus greenhouse was placed in operation. It is providing excellent facilities for on-campus work experiences in two classes studying Ornamental Horticulture. The work experiences engaged in by students is recorded daily on an oncampus work experience sheet. A sample copy of this form is shown and the work experiences listed are for a student during the month of September, 1965.

The greenhouse is serving well to encourage individual home projects in the field of ornamental horticulture. In addition to stimulating general interest in plant culture, several students are using the greenhouse to propagate and establish woody ornamental plants that will be finished in containers in their backyards. Bedding plants and perennials are managed in a similar manner.

Third year vo-ag students who have shown an interest and readiness to enter commercial employment are recommended for job placement. Placement will be in the areas of greenhouse, garden center, nursery and flower shop operation; and, in feed, seed, fertilizer,



pesticide, livestock marketing and food processing. Work assignments are for after school hours, weekends, holiday and vacation periods. The teacher recommends the student for interview with employers and working agreements are formed by the student and the employer. The vo-ag teacher selects employers and has general supervision of all on-job training.

Summary

Summarizing, the traditional type supervised farm program is being supplemented by several work experience programs designed primarily for non-farm students enrolled in vocational agriculture. The supplements are providing for work experiences for a group of non-farm students who enjoy working with plants and animals. Time will tell if the supplements prepare students for careers in the broad field of agriculture. If not, other approaches must be devised as preparation for agricultural careers is the prime role of vocational agriculture.

SIDNEY LANIER HIGH SCHOOL VOCATIONAL AGRICULTURE

(13).

RECORD OF ON-CAMPUS WORK EXPERIENCES

Name:		SEC. 51
Course: Ornamental I	Hort.	PER. 1st
Work Experience	REPEATED	Approved
(1). Disbudding Standard Mums	\mathbf{X}	OK
(2). Mixing Peat-Sand Media For Seed Flats	•	OK
(3). Assemblying Flats		More care in nailing Needed
(4). Fertilizing Mums		OK
(5). Spraying Mums		OK
(6). Sterilizing Soil With Methyl Bromide	XX	good job!
(7). Installing Over-Head Light Circuit	XX	good
(8), Planting Pansy Seed		OK .
(9). Weeding Woody Plants In Shade House		only part of period
(10). Potting Rooted Cuttings	X	OK
• /		
(8). Planting Pansy Seed (9). Weeding Woody Plants In Shade House		OK only part of period

Note: (1). Enter all campus work engaged in for the major part of a period.

(2). If work continues into the major part of another period indicate by check in "repeat" column.

(3). The right hand column is for teacher use.

"Agriculture, Agribusiness and

Vocational Agriculture"

LOUIS H. WILSON, Vice President for Information, National Plant Food Institute*

Talk given to NVATA, Miami, Florida, Dec., 1965

Inherent in all of us is the desire to work for advancement, promotion of our professions, to fight for what we believe is right, to help the weak grow strong, and the strong to grow great in the best traditions of the American private enterprise system.

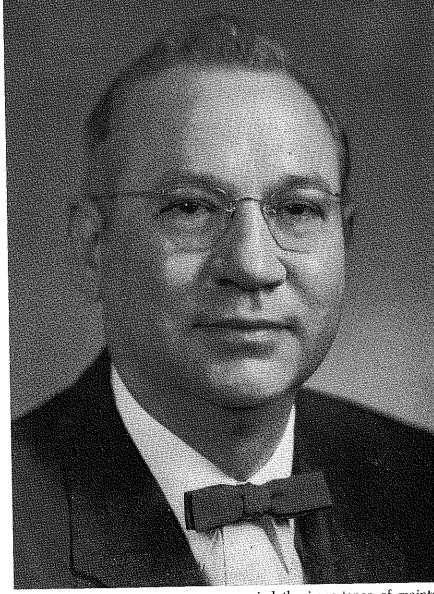
Within this concept, there is the continual imbalance that can be attributed to constant change. In fact, without this concept, our jobs and our future would be exceedingly dull and suffer from lack of imagination.

Right now, as you know, vocational agricultural education is facing considerable change. The challenge to you is to adapt to that change and still retain those essential parts of vocational agriculture which have contributed so greatly to the development of American agriculture as the bellwether for the world in efficiency of food and fiber production.

The fact that U. S. farm population is becoming smaller increases the importance of the farmer in our economy and magnifies the role of those who teach and serve in his industry. In fact, with diminishing farm population, agricultural efficiency becomes even more vital to farm production and agricultural leadership takes on increased significance.

Expanded urban interests in education are forcing realignment in a great many governmental services and educational programs. Even so, agribusiness looks to the vocational agriculture instructor to continue to tailor his teaching so that young farmers will have the best training possible, the best tools available, and the agribusiness leadership necessary to extend this nation's envied position as the best fed, best housed, and best clothed in the world.

National Plant Food Institute home office is 1700 K Street, N. W., Washington, D. C. 20006.



Don't Wait

Some reorganization of programs in the area of your interest may still be in the controversial conference and experimental stage. But don't wait for a hopeful outcome. Get the facts yourself. By all means, support your leaders in their efforts to provide direction. Don't be satisfied with the immediate impact of change, but look to the future impact of remodeling

and experimentation, keeping in

mind the importance of maintaining a strong economy, and, particularly, keeping agriculture strong productive and efficient.

Vocational agriculture has many friends, but they are no more effective than your communications—than the facts you provide to support a sound position that justifies enthusiastic support. In the big, important, and growing educational family, there are always some who are over-zealous to "follow"

(continued, page 62)

the leader" even though they may be dedicated to political expediency, and there are such leaders. However, the leader worthy of the name evaluates agriculture in terms of the greatest good to the greatest number and can be more important than helping farmers to be more efficient, more productive, with the full realization that consumers everywhere will be the beneficiaries.

What Do We Expect?

What does agribusiness expect of vocational agriculture? Faith in the future of the farming industry; devotion to the principles of efficient production; leadership to preserve the abundant life to which we have become accustomed. And, not least, a continuous flow of young men with basic grounding in agriculture to assume leadership positions in a rapidly-moving, technological world in which agriculture must be a strong, basic industry.

Teacher's Role

Many things will change, programs will be modified, agriculture must become more efficient, and you have a challenging share of the responsibility.

In evaluating the importance of the vocational agriculture teacher in the educational spectrum, he should emerge not only as a teacher, but as a recruiting officer and counselor.

As a counselor he must be familiar with the potentials of his students, and the needs of agriculture as a profession, whether on the farm or in agricultural business and industry. Careers in agriculture encompass the agricultural sciences, farming, and research not only for educational institutions, but for industry, as well.

At the high school level the vocational-agriculture teacher is the principal source of information on agribusiness careers and is the most likely person to influence potential leaders to enter the fields of agricultural science, farming, and agribusiness.

The challenge of the vocationalagriculture teacher should not be limited to farm-oriented young

Letters to the Editor

Dear Cayce: I had not planned to enter this debate on the "module" because I felt that your original editorial expressed my sentiments quite well. I am still of the same opinion; the "module" adds no more new meaning or understanding for its users than does the "resource unit" or other commonly used terms to describe this type of teaching material. However, the letter to the editor from Dr. H. M. Hamlin in the July 1966 edition of the Agricultural Education Magazine has increased my concern over the term

Before, having another synonym for the term "resource unit" made little difference to me, although I thought it unnecessary Dr. Hamlin has now attempted to define the term, and this is what causes me concern. He explained the term this way: "... a module may be a unit within any of several courses while a unit is an integral part of one course only. A module may be included in a course for twelfth-grade boys or a two-year curriculum in an area school, or it may be taught as a separate course for young or adult farmers." With this kind of explanation, it would appear that the "module" is really a new term quite different from the "resource unit." It is a much broader and more incompassing term. If I interpret correctly, a subject matter "module" might be developed which would serve equally well in the elementary, secondary, and area schools, as well as perhaps colleges and universities educational programs.

In reviewing the agricultural education modules already developed, I do not believe they can be used effectively at all institutional and grade levels. Furthermore, I have never encountered any recognized curriculum theory which supports the development and use of such broad encompassing resource materials. The kind of thing that the "module" implies is extremely difficult if

not impossible to accomplish.

The definition completely ignores such concepts as readiness for learning, levels of maturity, motivation theory, difference in educational background and achievement and other well-tested educational principles. If we accept this definition of "modules,"

we must stop criticizing the Vo-Ag teacher who makes one preparation and uses the same resource materials in teaching each of his Vo-Ag classes, regardless of grade level on a given day.

Frankly, I preferred the definition of module" when it was synonomous with 'resource unit.'

> Charles H. Rogers Assistant Professor N. C. State University

Thanks Charlie, for continuing the dialogue. The term "modules" becomes more interesting as we try to clarify exactly what we are talking about.—CCS

H. N. Hunsicker, Chief Agricultural Education Service Department of Health, Education, and Office of Education Washington, D. C. 20202

Dear Neville: I always read the Agricultural Education magazine from cover to cover.

I found the June, 1966, issue of special interest. I have read the article which you and Dr. Brooking wrote for this issue, and it is excellent. It certainly stresses the importance of our agricultural system, the scientific and technological skills involved, and the necessity for technically competent personnel. Your recommendations for curriculums, quality of programs, and facilities are sound. Of course, I was pleased and also proud to see two pictures taken here at Cobleskill. Your are to be complimented on the content of the article, because it is right to the point, hitting the essentials necessary for programs to train agricutural technicians. Congratulations for a good article, and thanks for using Cobleskill as an example.

Most cordially yours, Howard Sidney, Chairman Agricultural Division

Editor's Note: I was pleased to get a copy of this letter. Howard Sidney agreed for us to use it here.

men, but should encompass all students in promoting an awareness of fruitful careers in the entire field of agriculture. In the school system, the vocational-agriculture teacher should be eminently qualified as a spokesman for the contributions that agriculture has made to the economy. Better than most, he should likewise be qualified to tell the story of the vast technological changes and advances made by farmers, the increasing efficiency of the farm plant, and the resulting

benefits to consumers. There is no need for agriculture to take second place to the spectacular professions like space and nuclear physics, and there is no need for the vocational-agriculture teacher to be regarded as less important, for the present and future needs of food and fiber in the entire world are receiving unparalled emphasis. Here at home, we cannot afford to take our agricultural abundance for granted.

Farming is not only a way of life, but rapidly is being recognized as a complex of many sciences essential to the livelihood of man and the strength of the nation.

So, the role of the vocationalagriculture teacher is not just one of maintaining interest in agriculture, but encompasses the responsibility for inspiring young men to continue to seek the productive careers that await them as agricultural production specialists and businessmen, as scientists, and as specialists in the world of agribusiness.

Small Gas Engine Trouble Shooting

An innovation at the New York State Exposition in Syracuse in September was the Small Gas Engine Trouble-Shooting Contest. Ernest Nohle, AgEd Associate, State Department, sent us the rules, thinking others might be interested in a similar program,—Editor.

A new contest has been added to the New York State Exposition program on small gas engine trouble-shooting. This contest will consist of the following parts:

- L. Diagnosing the trouble in a small gas engine that prevents starting, smooth operation and maximum power output and then making proper adjustments for its opera-
- 2. Starting the engine and adjusting it for maximum power in a minimum of time using approved skills and orderly procedure.
- 3. The observance of safety practices throughout the contest. Scoring the contestants will be based

Systematic approach to trouble shoot-

Proper use of tools Orderliness and care in handling parts

Observance of safety practices Properly adjusted engine at the end of the contest

Time used in completing the diagnosis and remedy

Quiz on gas engine principles and trouble-shooting procedures General Rules

1. School officials and the teacher of agriculture will choose contestants to represent their school.

2. Contestants must be members of the FFA and in good standing with the State Association.

3. Contestants must have been enrolled in a course in vocational agriculture which included instruction on small gas engine operation and servicing during the school semester preceding the State Exposition at which they are to compete.

4. Participation in the contest will be by teams of two members each. They may be from the same school or two different schools.

5. All gas engines used in a contest will be of the same make and models and equipped with the same kinds of parts.

6. All gas engines are to be inspected by contest officials to assure standard condition and tested for proper performance prior to the installation of malfunctions in the contests.

7. Identical malfunctions will be installed in each engine and they will be checked by the contest committee to assure uniformity.

8. Parts that are needed by the contestants to correct malfunctions will be secured from the judges. Parts should be specifically requested by name by a team and an adequate reason is to be given for requesting the replacement.

Parts damaged through carelessness may, if available, be secured by a team member from the Part Supply designated at the contest. The time taken to install damaged parts will be considered as part of the elapsed time. Damage to an engine which cannot be repaired during the time allowed will result in disqualification from the contest.

9. The judges will observe progress of repairs but will not interfere with teams unless such repairs are damaging to engine or to the safety of contestants.

10. When the team contestants feel they have finished they will signal the judge and the time will be recorded and the scoring of contestants will be completed by the judges.

Each contestant will complete a quiz on his knowledge of gas engine trouble-shooting procedures which will be rated as an item in scoring the contest.

Additional rules and instructions for teachers in preparing contestants.

1. Contestants are to wear safety glasses in the contest. Each contestant will supply his own glasses.

2. Contestants may assume that the engine is equipped with a good coil and condenser. There will be no malfunctions requiring the removal of the engine base.

3. A trouble diagnosis guide will be useful in preparing contestants but cannot be referred to during the contest. One sample of such a guide is enclosed but it will not be used as a basis for scoring in the contest.

4. A parts basket will be provided for each team in the contest.

5. Teams will work on a single cylinder 2, 2-1/2 or 3 horse power Briggs & Stratton engine mounted on benches 30"x4'x32" high. Engines will be equipped with either suction-feed or flow-type carbure-

6. Teams will be limited to 30 minutes for the contest.

7. Teams will be given time before the start of the contest to arrange tools on the bench for the contest. The time will not be counted in the contest but tool arrangements and preparation for the work at hand will be scored.

8. Each team is to provide its own

tools for the contest. These should consist of the usual tools which might include sockets, sizes 1/4" 5/16'', 7/16'' and 1/2'' with ratchet and 4-6" extension; deep wall socket, spark plug wrenches 3/4" and 13/16", a selection of various sized screwdrivers and a small hammer or mallet aluminum, rawhide or plastic faced plus those tools the teams desire and special tools for Briggs & Stratton servicing such as: flywheel holder, 19167; valve spring compressor, 19063; starter wrench, 19114; screwdriver, 19061: flywheel puller, 19069; spark plug tester, 19051; a tachometer with range up to 4,000 or more R.P.M., and a feeler gauge (.002"-.025"). Tachometers will be provided for those who may not have them available. NOTE: A coil and condenser tester will not be needed for the contest.

Trouble Chart

A. Engine difficult to start.

1. No fuel in tank

2. Fuel flow obstructed

3. Loose or defective wiring 4. Spark plug cracked

5. Spark plug fouled

6. Improper choking

7. Improper fuel mixture

8. Throttle valve stuck or out of adjustment

9. Throttle rod loose

10. Defective ignition system

a. Breaker points worn or pitb. Breaker points out of ad-

iustment

c. High tension wire shorted d. Incorrect armature air gap

e. Sheared flywheel key

f. Coil failure g. Condenser failure

11. Poor compression

B. Engine Missing

1. Spark plug fouled

2. Spark plug cracked 3. Defective wiring

4. Ignition or breaker points sticking

5. Spark plug gap wrong

6. Valves warped, broken or sticking

C. Engine losing power

1. Carburetor choke valve partly closed

2. Improper fuel mixture

3. Piston rings sticking

4. Muffler clogged

5. Improper timing 6. Overloaded

7. Cooling air stream obstructed D. Faulty Carburetion

1. Carburetor improperly ad-(continued, page 64)

Do You Read Me?

"Do you read me?, do you read me?" "I've read you five by five." This conversation over the radios during World War II always caught my interest. Who was calling, what did they have to say. You can imagine how dramatic some of the messages were that crackled across the air. The messages were often quite important. They were to be understood. Tragedy could ride with a message that was not understood. Communication today is still important. In fact the misunderstood communication today may cost minutes, dollars or lives.

We as teachers are trying to communicate with our students, parents, school people and public. Do they understand what we are trying to say? Are we coming through loud and clear?

How many times have you asked a question on a test knowing exactly what you were thinking but getting many wrong answers that proved the students did not understand the question? How many times have you told a student exactly how to do a job and have him do it wrong and say "I did just what you told me to do." If these things haven't happened to you, you are either the perfect teacher or else you haven't been teaching very long.

Ernest Nohle

(continued from page 63)

iusted

- 2. Sediment or water in fuel tank
- 3. Fuel inlet valve stuck
- 4. Improper fuel level in carburetor bowl
- E. Excessive smoke from Exhaust
 - 1. Carburetor needle valve open too far
 - 2. Worn piston or piston rings
- F. Explosion in carburetor
 - 1 Gas mixture too lean
 - 2. Intake valve sticking
 - 3. Intake tappets sticking
 - 4. Intake valve warped or broken
 - 5. Intake tappets set too close
- G. Poor Compression
 - 1. Valves not seating
 - 2. Valves sticking
 - 3. Piston rings worn or weak
 - 4. Piston rings broken
 - 5. Piston rings sticking
 - 6. Loose spark plug

 - 7. Cylinder head loose 8. Scored cylinder



J. R. Hargrave

One time when we were growing vegetables for a special fair exhibit, cold weather had reduced our okra planting to one precious row about 200 feet long. It was growing pretty good but so were the weeds so I told a student "Joe, I want you to go hoe that okra." Well, you know what happened, he was an Ag I boy who wasn't familiar with what I intended by "hoe the okra." When I went to see how he was getting along he had just finished hoeing the row of okraup. What can you say at times like that? I surely do hate to see grown men cry.

Here are a few suggestions offered in the hope they will stimulate your thinking about good communication.

1. If you can avoid it, don't use words that have a double meaning. If you tell a student to "plow down the row" does that

> 9. Worn piston and cylinder References

The following references are suggested for use in preparing for the con-

1. General Theories of Operation

mean to go south or put the plow down the row?

2. Once or twice a week try writing some instruction for your students. When they come to class hand them the written instructions and see what happens. Plain, simple instructions are not as easy to write as one might think.

3. Ask a student to give instructions to a work group or explain a shop operation; they need to learn to communicate too.

4. Let your red-hot test questions cool overnight. Read them the next day. Do they still ask what you want them to? If so, get out the typewriter or ball point pen and cut a nice clean stencil.

5. Get your wife or some other smart person to read that letter before you make the final copy to send home by students or mail.

6. Let the rest of us know if you have some fail-safe method of communication.

7. Take the rest of the day off to polish your halo if you've never been misunderstood.

Yours for better communication, Bob (I never made a misteak) Hargrave Teachers of Vo-Ag Howard Bishop Jr. High School Gainesville, Florida

2. Briggs & Stratton Repair Instructions II. These are both available from Briggs & Stratton Corporation.

3. Also helpful-I & T Small Engine Service Manual. Available from Technical Publications, Kansas City, Missouri.

NVATA LEADERS ACTIVE



NVATA VICE PRESIDENT ATTENDS STATE CONFERENCE—Gerald Page, NVATA Vice President Region IV, attended the annual conference of Illinois Vo Ag Teachers at the University of Illinois He is shown left, with F. L. Rice, past president, and M. J. Nicol, president, of the Illinois Association.

Agricultural Short Course and Four-Year Students Compared

DUANE L. ANDERSON, Sacramento State College, Sacramento, California

Agricultural educators constantly seek new and varied approaches to meeting the needs of $(\hat{1})$ today's agriculture and (2) agriculturally oriented students. For the most part, this searching and experimentation is bringing about desirable innovations and change. It may, however, contribute to oversight of presently successful programs which are worthy of continued and even increased support.

The purpose of this article is to report on a recent study which analyzed two groups of agriculturally oriented students at Michigan State University.

The Two Groups

The two populations studied consisted of 199 degree students and 176 short course students enrolled in the College of Agriculture at Michigan State University for their first post-high school educational experience during the fall of 1964. Female, transfer, and foreign students were not included in this study. Complete data were gathered from all but two degree students shortly after they arrived on campus. The MSU 3600 Computer analyzed the data using the Unit Normal Curve Probability or "Z" test and the Chi Square Test. The .05 level of significance was selected as the criterion in testing the statistical hypotheses.

Annual enrollments average 225 students in the Young Farmer short and 175 students in the Agriculture Industry short course programs. Short course graduates are awarded certificates of completion and assisted by program coordinators in securing placement and post-graduate employment. Faculty members employed throughout the University, on a regular full-time basis, teach short course classes. Short course and degree students are taught in separate classes. The separation of classes, a long standing policy, has been maintained on the basis of general opinions that short course students and degree students

are substantially different. The purpose of the study of the two types of students was to accurately and clearly identify some of the psychological and sociological differences that were thought to exist between the two types of students. The information sought was believed to be of primary value to the faculty members who teach and offer vocational and educational advisement to these students. (Also, for all agricultural educators at all levels in planning educational programs and student personnel services to meet the needs of agriculturally oriented students).

Every teacher, facing his class for the first time, may subconsciously ask himself several questions. Who are these students? Where do they come from? What types of preparation do they have? What can I expect of them? The answers may never be verbalized, but, hopefully, each teacher functions in accord with some systematic rational premises concerning these and related questions. One of the main goals of the student was to contribute reliable data with which intelligent opinions concerning these students could be formed.

Psychological Factors Examined

Data from the Sixteen Personality Factor Test⁸ revealed significant differences between the short course and degree students on three factors. An overall view of the Test's results shows short course students are less emotionally stable, less intelligent, less self-confident,

more worrying and suspicious, intend to be dependent, cautious, and conventional when compared to degree students. The descriptive terms of the Test's factors indicate short course students are generally less mature than degree students and require more personal counseling and educational advisement. Since the process of maturation involves establishing a degree of independence in social interaction, short course students appear to need more guidance in developing greater social maturation.

Short course students have acquired the work-related beliefs most typical of extended-kinship families. The MSU Work Beliefs Check-List⁵ measures six areas of work-related beliefs on a continuum of beliefs common to extended kinship families as opposed to nuclear type families. The two groups of students differ on two areas. Short course students look less favorably on physical mobility, the ability and willingness to move from one's home situation to obtain employment elsewhere, and upon change, which encompasses the acceptance of new or different ways of doing things. Because our society is oriented toward mobility and change, any segment of society which fails to accept and even encourage change is in a very disadvantageous position to compete economically in an urban-industrialized society.

The Rokeach Dogmatism Scale, Form E, was used to measure the degree of dogmatism or "closedmindedness" among students. Short course students were found to be significantly more dogmatic or closed in their belief systems than degree students. Mean scores reported by the author of the scale

Distribution of scores of agriculture short course and degree students on the Rokeach Dogmatism Scale, Form E.

			*	SCORES					
	040- 100	101- 140	141- 160	161- 180	181- 200	201- 220	221- 280	Mean	s.o.
Short Course Studer		14 7.96	37 21.02	46 26.14	46 26.14	26 14.77	7 3.98	**176.46	25.50
Degree Students Pct. Across	3 1.52	35 17.77	50 25.38	63 31.98	35 17.77	10 5.08	.51 	**162.30	24.78

^{*} Chi Square - 30.346, degrees of freedom - 7, significant at .001 level.

^{**} Z - 5.428, significant at .0001 level.

and in other studies indicate that a mean score of approximately 165 is typical of student groups. Table I reveals that 18.75% of the short course students score above 200 while only 5.59% of the degree students score that high. The reverse is true below the 140 score level. Dogmatism or closed-mindedness affects a person's ability to learn certain types of information. The ability or willingness to learn theoretical or philosophical ideas is hindered by a closed mind. Dogmatic persons are most able to learn factual materials or concrete illus-

trations or demonstrations.

College education is a liberalizing experience for most people. Since Short Course students are more dogmatic and are in course work for only four academic terms or less, it is reasonable to conclude that such a short college experience cannot entirely offset the effects of previous environments. Efforts directed towards opening and broadening the perspectives of these students seem likely to have a profound effect on their intellectual development.

Occupational Aspiration

The Occupational Aspiration Scale,4 developed by Haller and Miller, was used to determine levels of occupational aspiration. Degree students scored significantly higher than short course students, indicating higher occupational aspirations. Since the number of farms and the size of rural population is declining, it is reasonable to assume that at least some of the short course students aspiring to farming careers will not be able to farm. Because of lower occupational aspiration levels and lack of training in non-farm occupations, these students may be unemployable or in a very disadvantageous position in the urbanindustrial labor market.

More short course students than degree students have made a decision concerning their occupational choice prior to enrollment in their college program. A larger proportion of short course students had decided to be farmers and a smaller proportion had decided on non-agriculturally related occupations. Since the curricula of short course programs is particularly vocation-

TABLE 2

Mean Scores of Agriculture Short Course and Degree Students
in the College Qualification Test

	SHORT COURSE STUDENTS	DEGREE STUDENTS	STATISTICAL TEST VALUES		
SECTION OF TEST	Mean	Mean	Z Test	Sign. Level	
/erbai	28.261	43.883	11.598	*.0001	
Informational	36.483	49.193	14.609	*.0001	
Numerical	18.943	30.726	14.710	*.0001	
Total Score	83.631	123.802	16.423	*.0001	

*At or beyond the .05 level of significance.

ally oriented, this was not totally unexpected. These decisions may be untried fantasies, rather than rational choices. They may be the result of the limited scope of tentative occupational roles which were available on the farm or in a small town. Lower levels of occupational aspirations, whether caused by personality constructors or environmental conditions, restrict the range of occupations which short course students consider for careers. It seems obvious, therefore, that these students need more vocational counseling than the average college student. It is essential that career choices be made on the basis of objective and realistic information and counseling should be directed to this end.

Degree students score significantly higher on all three aspects of the College Qualification Test,² which was used as a measure of academic aptitude in this study. Mean scores and statistical test values are illustrated in Table 2. There were several possible explanations for this difference. University admissions requirements restrict the range of scores for degree students. Educational preparation in high school may be partially responsible for the difference.

In some cases, particularly in small urban or rural high schools, conflicts involving vocational agricultural courses and college preparatory courses are not uncommon. Short course students have completed on the average 2.56 years of vocational agriculture in high school as compared to an average of 1.19 years completed by degree students. Lower educational aspirations on the part of the student and his parents may also con-

tribute to this difference. Dogmatic or restrictive attitudes toward learning new ideas have probably contributed to the lower academic aptitude of the short course students.

Sociological Factors Examined

Parents' Educational Level: The fathers of short course students completed fewer years of school than the fathers of degree students. The statistical difference was largely accounted for by the number of short course students' fathers who dropped out of school after the eighth grade, 23.3%, compared to only 13.2% of the degree students' fathers. The years of school completed by degree students mothers was only slightly higher than short course students' mothers, 12.28 years to 11.93 years. The percentage of short course students fathers and mothers attending at least one year of college were 19.89% and 27.27% respectively. The percentage of degree students fathers and mothers attending at least one year of college were 39.08% and 37.05% respectively. Parents' Occupations: The major

differences between the populations were in the larger proportion of de-gree students' fathers following professional occupations and the larger proportion of short course students' fathers employed in farming enterprises. The fathers of both populations were predominantly blue collar workers. Sixteen percent of the fathers of degree students were employed in a profession, as compared to 4 percent of the fathers of short course students. Fifty-one percent of the short course students' fathers were farmers as compared to 33 percent of the degree students' fathers.

The mothers' occupations were (continued, page 67)

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not significantly different between the two populations. Over 70 percent of the mothers of both populations were predominantly housewives.

Fathers' levels of income were estimated by the students and admittedly may not have been entirely accurate. However, there was no reason to believe that one group would be less accurate than the other group. Income estimates were grouped according to whether the fathers' main occupation was farming or non-farming.

The estimated mean value for gross incomes of short course students' fathers engaged in farming was not significantly different from that of degree students' fathers, \$85,308 as compared to \$78,281. The estimated mean gross income for short course students' fathers who were non-farmers was \$8,359 as compared to \$10,129 for degree students' fathers. The major source of this significant difference was probably due to the larger proportion of fathers in professions among degree students.

There was no significant difference in the number of older brothers between the two types of students. Less than 12% of all 373 subjects had more than one older brother. This factor was included because it was thought that the number of older brothers was related to a student's attendance at college. Significant evidence that older brothers either hinder or facilitate attendance at college or short course programs was not available in this study.

There was a significant difference in home location between short course and degree students. A higher proportion of degree students come from cities over 10,000 population and a much lower proportion come from farm homes. The majority of degree students do not come from active farms. Only 42% as compared to 68% of the short course students come from the farm. When asked whether they had ever lived on a farm, 48% of the degree students and 16% of the short

course students indicated they had not.

There was a significant difference in the perceived encouragement from their parents to attend a short course or degree program between the two groups of students. Several studies reviewed noted that parental aspirations are related to educational aspirations of their children. Parents of degree students encouraged entrance into a college program. Eighty-seven percent of the degree students' parents encouraged attendance at college while only 9 percent encouraged attendance in short courses. Fortytwo percent of the short course parents encouraged attendance at college while 70 percent encouraged attendance at short courses.

A more covert expression of encouragement was the amount of financial aid parents were willing to supply their sons. Approximately one-half of the short course students report that their parents supplied less than 30% of their expenses as compared to one-third of the degree students receiving less than 30% from their parents.

Jobs which require knowledge and skills not normally associated with the occupations within the students' major area of study were considered useful in acquiring information concerning future occupational choices. The mean number of outside job experiences reported by both groups was 2.08 jobs; however, a larger proportion of degree students had two or more jobs. Boys whose fathers were not farmers, even among short course students, were more likely to have had wider job experience than farmers' sons.

Work Preference

There was a significant difference between agriculture short course and degree students in their preference for working with ideas, machines, animals, plants, and people. The highest percentage of those reporting from both groups reported a preference to work with animals. A larger proportion of short course students than degree students indicated a preference to work with machines. Similarly, proportionately more degree stu-

dents preferred to work with people. Working with ideas was preferred by only 11% of both groups.

It seemed reasonable to conclude that the educational aspirations of the sons were substantially affected by the attitudes and desires of the parents and the fathers in particular. Fathers and mothers ranked first and second respectively in the amount of influence students attributed to their closest adult contacts. The educational levels and occupations of the fathers of agriculture short course and degree students are related to the educational program selection of the sons. Since educational program selection is directly concerned with occupational career choices, the influence of the father may again be the crucial factor in choosing to follow an agricultural career. The overwhelming support of degree programs among degree students' parents as compared to the almost total lack of support for the short course program presents a vivid example of parental influence and parental aspirations. The relatively lower value degree parents place on short courses is a reflection of their aspirations for their sons to achieve a higher prestige level occupation than short course training offers.

The location of a student's home apparently affects his choice of a vocation which in turn affects his educational plans. Fifty-nine percent of the students living on a farm or who had lived on a farm elected to pursue a short course program. A farm background apparently contributed to lower educational aspirations. From studies by Dr. A. O. Haller,4 Michigan State University sociologist, residence is also related to personality differences and, in the case of farm youth, may contribute to a lack of emotional and social maturity.

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George Pierce, Tulare Union High School, California, becomes a successful cotton grower as a result of his instruction from R. Boucher in financing, machinery cost, defoliation, spraying, picking, and harvesting. BOOK
REVIEWS

BRAKENSIEK, I. L. and L. J. PHIPPS, Self-Study Guide in Animal Science—Feed-Livestock and Poultry, The Interstate Printers and Publishers, Inc., Danville, Illinois, 163 pages, \$3.00.

The Self-Study Guide in Animal Science consists of 361 multiple choice questions covering nearly all phases of animal science. Starting with the section on general feeding principles and closing with twenty-five questions on feeding terms, the 163 page book covers the field of animal science in ten sections.

The authors suggest the book should be used as a program instruction type test. "Motivation through immediate feedback" is the theme which they use to justify the purpose of this book and students learn more with this self-study guide as they enjoy using it. However, it falls very short of becoming a programmed text in the accepted sense of the word as there is no logical sequence of learning steps or a state purpose for each section. I doubt if the students would enjoy using the book as the writing is quite unimaginative and the structure is difficult to follow.

Its value for the teacher of agriculture may be as a source of examination or review questions, rather than a classroom text. Some serious thinking should be given prior to adopting this book as a classroom textbook.

Dr. Phipps is Chairman of the Agricultural Education Dept. at University of Illinois and Mr. Brakensiek is teacher of agriculture in Illinois.

James Hannemann Michigan State University

SANDERS, H. C., The Cooperative Extension Service, Prentice-Hall, Incorporated, Englewood Cliffs, New Jersey, 436 pages, price \$10.00.

The Cooperative Extension Service is an end-of-the-day, easy-chair, relaxed type of reference text. Its content, edited by H. C. Sanders, Director Emeritus of the Louisiana State University Agricultural Extension Service, consists of the experiences and philosophy of forty-one professional extension personnel.

As a professional educator relaxes at the end of the day and reflects upon the past day's activities and looks toward the future, this book is an invaluable guide

and source of information on the "how" as well as the "why." Its real value for teachers of agriculture may be the chapters where the book explains the techniques of planning and/or effecting change. Many of its recommendations can be applied to rural education through yocational agriculture.

In summary, it provides current, factual and helpful information for teachers of agriculture and is a valuable tool in the planning, conducting and evaluating of the total agricultural program.

> James Hannemann Michigan State University

PERRY, TILDEN WAYNE, Feed Formulations Handbook, Danville, III.: The Interstate Printers and Publishers, 1966, pp. xxii + 233. Price \$4.95.

The book is designed for feed manufacturers, feed mixers, farmers and stockmen who use manufactured feeds or who mix their own feed. Animal nutrition has changed from the time when it could be said "the eye of the master fattens his cattle," to the point where it is said that "a particular feed stuff may contain some 25 carbohydrates, 15 fatty acids, 23 amino acids, 14 mineral elements, and 20 vitamins." This scientific and technological development makes it possible for the feeder to regulate costs per pound of meat more closely than when there was little information available concerning feeding of livestock.

The book should be a required text and reference for programs where agricultural students are being trained for highly skilled and technical level positions in feed mills, farm supply centers and feeding operations in the livestock and poultry industry.

Doctor Perry is professor Animal Sciences at Purdue University.

Raymond M. Clark Michigan State University

NELSON, KENNARD S., Flower and Plant Production in the Greenhouse, Interstate Printers and Publishers, Inc., Danville, Illinois, price \$4.75.

Flower and Plant Production in the Greenhouse is an excellent example of an instructional aid prepared for a developing agriculture curriculum. Dr. Nelson, presently Vice-President of a (continued, page 69)

Book Reviews
(continued from page 68)

large flower company and former extension specialist in floriculture at Ohio State University, has written a practical and scientifically sound text and/or reference for students of agriculture.

The book is intended to be used as an introductory text for basic floriculture. Its opening chapter discusses the floriculture industry which sets the stage for a discussion of the flower growing structures needed for flower production and how the surrounding environment affects plant growth. An excellent series of pictures vividly supplements the section on soils, fertilizers and irrigation.

The main portion of the book, 127 pages, covers cut flower crops and pot plant production. These two chapters explain the requirements for organizing a production program and the steps to follow to implementing the program.

The book is well illustrated with many excellent pictures to supplement the text and has a glossary of 156 greenhouse terms. Not only is the book valuable for those departments teaching elementary floriculture, but it is an excellent reference book for all departments.

James Hannemann Michigan State University

ANATOMY AND PHYSIOLOGY OF FARM ANIMALS, R. D. Frandson, Lea and Febiger, Philadelphia, 1965, pp. 501, \$12.50.

The fundamentals of anatomy and physiology common to all animals are considered in this book, and those pertaining to species differences in cows, horses, sheep, swine and dogs are elaborated. Attention is given to the digestive and reproductive systems, milk secretion, mammary glands, and the endocrine system. The book is clearly written and has 231 illustrations throughout. A brief skeleton outline showing each chapter's content heads each of the 32 chapters. Anatomical and physiological terms are clearly defined, and structure-function relationships are clarified.

This book is written primarily for undergraduate students in animal agriculture. It has relevance for programs in post high school technical agriculture in junior colleges, area schools, and young and adult farmer classes. A vocational agriculture teacher would find it a valuable supplementary reference for high school use as well.

The author, R. D. Frandson, D. V. M., is Professor of Anatomy in the

College of Veterinary Medicine at Colorado State University.

Hilding W. Gadda South Dakota State University

Rural Youth in Crisis: Facts, Myths and Social Change.

USDHEW, Office of Juvenile Delinquency and Youth Development. Jd-3001-1965.

Order from: Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402, \$1.25.

A series of papers prepared for and presented at a recent "Conference on Problems of Rural Youth in a Changing Environment" which was sponsored in 1963 by the National Committee for Children and Youth. Each paper was prepared by one or more experts in their respective fields.

Assuming that all youth have a series of similar problems that they must resolve as they mature in our society, additional burdens are imposed upon rural youth. "Not only are many rural youth seriously disadvantaged socially, economically, and educationally, but these problems are compounded because rural youth often fail to receive sufficient preparation to bridge the gap between being able to "get by" in a rural environment and becoming contributing citizens in an urban society.

The book has 27 chapters divided into six sections as follows: (1) Their Rural Community Backgrounds, (2) Rural Education, (3) Physical and Mental Health of Rural Youth, (4) Prevention and Treatment of Juvenile Delinquency in Rural Areas, (5) Adapting to Urban Ways, and (6) Helping Socially Disadvantaged Rural Youth.

In addition to its Tables, Charts, Graphs, Figures and compilation of basic data, the book provides a discussion and interpretation of the facts. It would be useful to the novice as well as to the experienced rural youth work-

John Thompson Michigan State University

Coppock, John O., Atlantic Agricultural Unity: Is It Possible?, McGraw-Hill Book Company, New York, N.Y., 1966. pp. 238, Price \$7.50

"Atlantic Agricultural Unity" is the third volume in the Atlantic Policy Series. The book is written in a lively and engaging style but with a sharp eye for the political realities throughout the Atlantic Community. In this book it is pointed out why many of the conflicts of interests among the various countries, both in agricultural policy and trade, are so serious and so difficult to resolve.

The author's analysis shows that, in

view of new technology, new machines, and new synthetic fertilizers, half of the farmers in the North Atlantic region could quit farming today, and we would still have a surplus of food. Food production-already exceeding what can be consumed in the region and sold commercially to the rest of the world-would still go on rising, even if food prices were allowed to fall. Since "modern" agriculture is going to mean "Western" agriculture for a long time to come, any agricultural policy (and every conflict) will affect the entire Atlantic Community until the diverse points of view can be resolved.

This is a forceful book, and a challenging and unusually timely book that will be of greatest interest to readers concerned with any aspect of the community, for if agriculture is only a small part of the community's product and trade, it is nevertheless an important tool in international negotiations, and as such, is examined by the author with immense skill, authority and clarity.

John O. Coppock, the author, is associated with the Food Research Institute of Stanford University.

Guy E. Timmons Michigan State University

FARM OUTPUT and OUTLOOK

A recent Economic Research Service appraisal of U.S. agriculture's potential over the next 10 to 15 years leads to these conclusions:

- Farm output can more than keep pace with population growth and other factors expanding the domestic demand for farm products.
- Farm output can also provide for continued growth in exports—at least equal to the trend of the 1950-60 decade. With such an expansion, total farm output by 1980 would be 40-45 percent above the 1959-61 average. This could be accomplished with little more land than now in use, and with little change in average prices received by farmers.
- Moreover, if all cropland now diverted from production under various programs were brought under cultivation, projected farm output would rise more than 50 percent above the 1959-61 average. Agricultural Outlook Digest

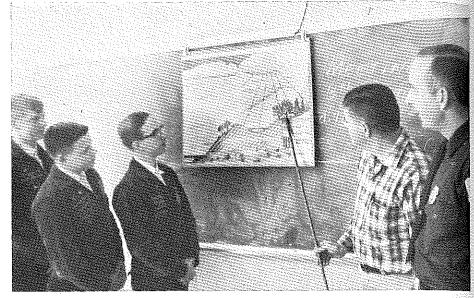
BIO-AG ED

A rapidly growing associated field of agricultural education is the biological sciences. Many colleges, schools and departments of agricultural education are making major curricular adjustments to meet the biological science needs of future agricultural educators. However, there has been little opportunity for meaningful exchange of ideas about requirements in the biological sciences among teacher educators in agricultural education and related sciences in different institutions.

Seven action committees to study, report and recommend desirable instruction in the biological sciences for undergraduates majoring in agriculture and related sciences were recently formed. One of these committees was the Biological Sciences Action Committee on Agricultural Education, Four of the committee members are: Joe P. Bail, Cornell University; Lloyd J. Phipps, University of Illinois; Orville E. Thompson, University of California at Davis; and Robert E. Taylor, Committee Chairman, Ohio State University.

The committee was charged primarily with recommending desirable instruction in the biological sciences for undergraduates majoring in agricultural education. A secondary goal was to recommend courses in the physical sciences and mathematics required for the instruction in the biological sciences. Representing the related fields in biological sciences for agricultural education were: Dr. R. H. Westveld, School of Forestry, University of Missouri; Dr. Thomas J. Stanly, Applied Science, Francis T. Nichols State College; Dr. Grover C. Miller, Department of Zoology, North Carolina State University; and Dr. A. R. Hilst, Department of Agronomy, Purdue University.

The report of the Biological Sciences Action Committee on Agricultural Education, along with reports from the six other action committees, will be summarized into a single position statement. The position statement will then be reviewed by professional societies, modified, discussed during a conference of deans, directors of instruction and faculty members; modified again and distributed widely. The present timetable calls for distribution of the completed report to scientists and educators in biology, agriculture and related areas on January 1, 1967.—Robert E. Kerwood, Graduate Associate, Ohio State Univer-



Vocational agriculture students of Tunstall "Keep Virginia Green" receive up to date instruction in their curriculum on fire control from their state Foresters. Photo—T. D. Burgess.



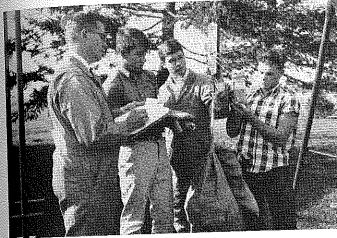
A Minnesota class in the man power program receiving instruction in artificial insemination. Adults take time to prepare themselves for employment in agricultural related fields, Instructors shown are Mr. James Witte and Dr. Frank Rose.



To round out the experience program in this non-farm agricultural business, Roger is selling ornamental plants to a customer. Photo by St. John

Stories in Pictures

GILBERT S. GUILER
OHIO STATE UNIVERSITY



The Vocational Agriculture students at Cloverleaf Senior High School, Lodi, Ohio are conducting corn yield checks on their projects. Mr. Tom Wetli, a student from the Ohio State University along with Mr. Weir are supervising these yield checks.



Vice President Humphrey receives the Honorary FFA Degree charm while visiting the Minnesota State Junior Fair Livestock Exhibits.



Gary Swenson, FFA president, Stillwater High School, in Minnesota, is shown cob-feeding a hog that officially kicked off Minnesota Pork Week.

Governor Rolvagg of Minnesota presented the pig to the Stillwater FFAChapter to raise. Proceeds from the hog will go to the chapter treasury.

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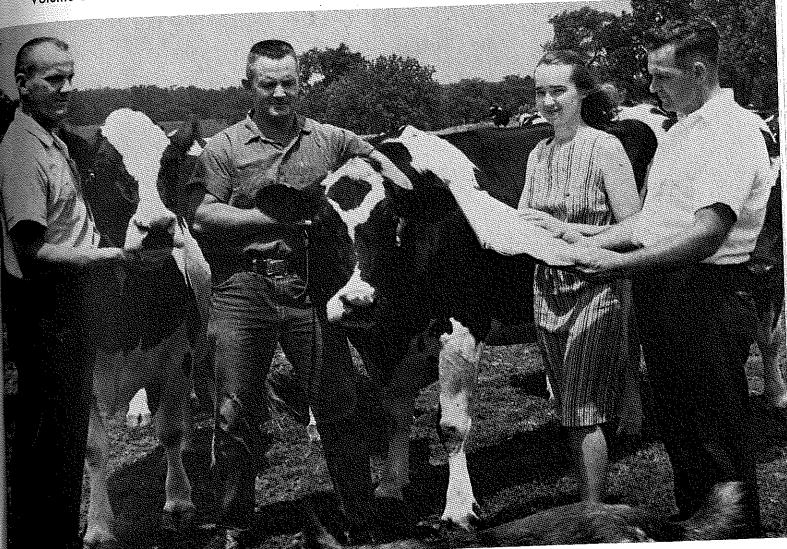
Photo by W. J. Kortesmaki.

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