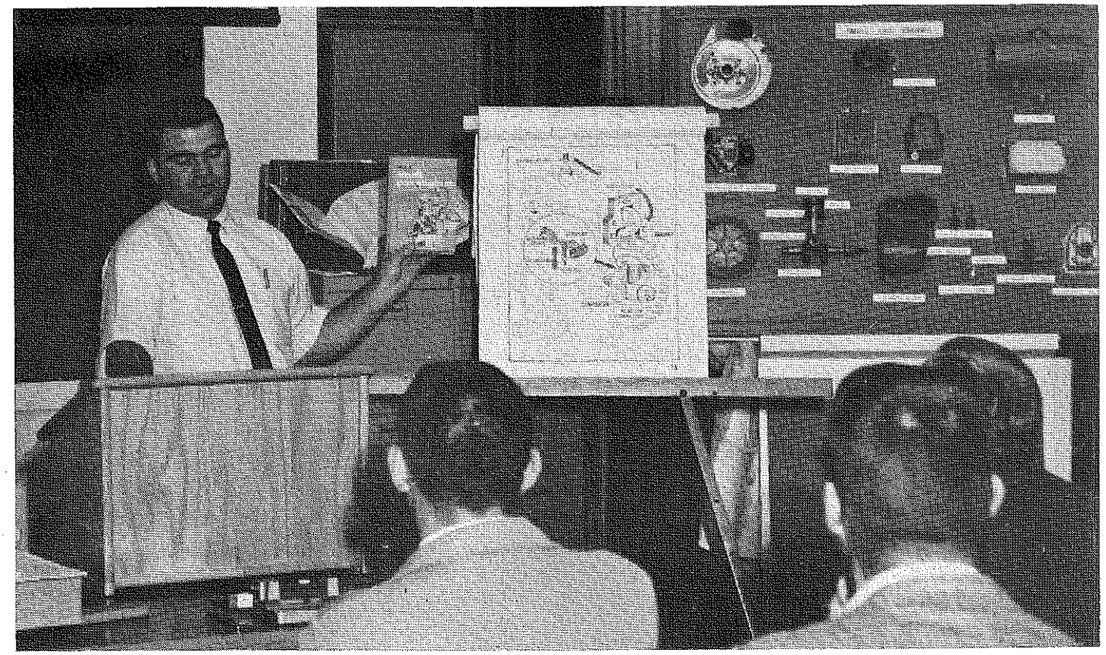
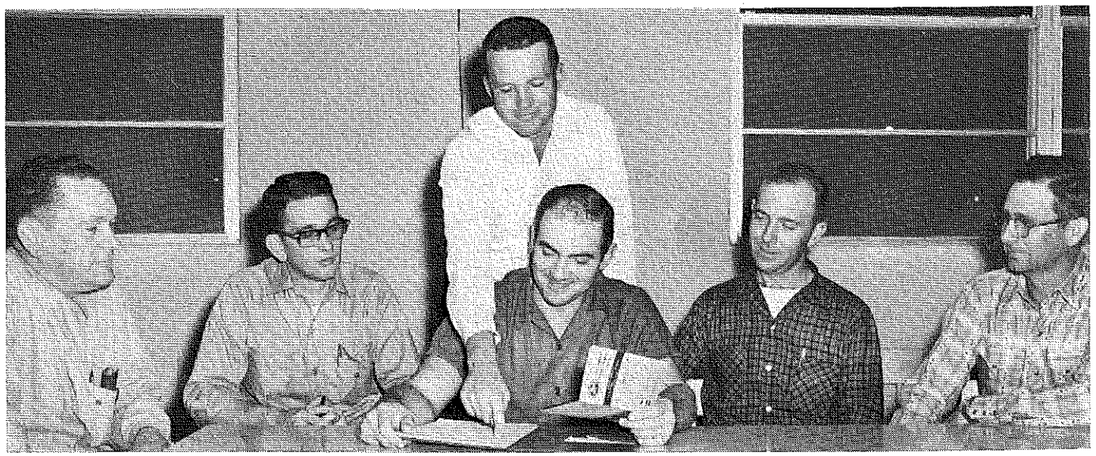
Stories in Pictures

GILBERT S. GUILER
Ohio State University



Considerable interest is expressed by vocational agriculture teachers and supervisors in Arizona, attending a workshop on small gasoline engines, taught by Marshall Machado of the University of Arizona. Audio-visual materials and demonstration engines were used liberally during the two-day program. (Photo by K. Evans)



Texas Vocational Agriculture teachers, area supervisors, and young farmer teachers work closely in carrying out special educational projects. From left are: J. B. Payne, Supervisor of Vocational Agriculture; YFT State Officer Tommy Knowles; YFT President Kenton Harvey, and Dublin Vocational Agriculture teacher, Weldon Whitehead. Also, Young Farmer Bill Lane—general chairman of the Field Day committee.

AGRICULTURAL EDUCATION

Agricultural Education

Volume 40 July, 1967 Number 1

The Next 50 Years 1967-2017

John Jacoby (1967 Agri. Edu. Graduate) is shown by Mr. H. W. Nisonger, the first teacher of vocational agriculture (1917) the way he taught seed corn selection in vocational agriculture. However, both have agreed that seed corn selection is not an apparent problem during the next 50 years.

Mr. Nisonger taught vocational agriculture, served on teacher education staff and served as junior dean on the college of agriculture at Ohio State University.

1917.....50th ANNIVERSARY.....1967
1st National Vocational Education Act

THE
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MAGAZINE

Vol. 40 July, 1967 No. 1

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EDUCATIONAL PRESS ASSOCIATION OF AMERICA

Editorials

WHITHER AGRICULTURAL EDUCATION?

About 30 years ago, *The Agricultural Education Magazine,* featured a series of articles under the general heading or query, *Whither Agricultural Education?* In spite of the fact that some wags of the day omitted the "h" and the question mark, it may be that the 30-year old query is still worth our consideration. This is one of those questions, and most important questions are of this type, that even though answered at one time, still remain to confront us over and over.

The feature articles, written by Agricultural Education leaders of the 30's, were later compiled into a booklet. To illustrate the continuing nature of some of our problems, note this quote from the Foreword of this publication:

> *From the standpoint of changes in technology, an agricultural revolution is taking place in the United States . . . . . as we face the present and long-time problems of agriculture it seems certain that we too must place renewed faith in the services of education, and challenge ourselves anew to improve such services to meet the changing needs of our young people.*

So, it may be encouraging to know that many of our predecessors faced problems not too different from those we face. The basic questions and the basic answers remain about the same. Perhaps it is the different setting that causes us difficulty in identifying the problems as well as deciding upon our answers. Remember that the leaders of 30 years ago were talking about "—meeting the needs of young people in planning their life careers in the field of agriculture." Sounds like the speech you heard at that last conference, doesn't it? Maybe instead of going to the next conference you might look in the old files and read *Whither Agricultural Education?*

But how do we answer this question now and for the years just ahead? The question is difficult, as it has always been. As indicated, the setting may be our biggest problem. For example, the large consolidated school has more factors influencing the work of a teacher of vocational agriculture than did the small school of a generation age. And, what's even more to the point, more of these factors are beyond the control of the teacher of vocational agriculture or the supervisor than was the case in the smaller school setting. This may be "good", but I suggest that it creates some difficulty to the teacher and other leaders in Agricultural Education when they are trying to influence the direction of Agricultural Education. As the Role Specialists remind us, there are several "Relevant Others" in the world of the teacher of vocational agriculture who were not there a few years ago. Just to name a few, the Guidance Counselor, Local Director of Vocational Education, Director of Instruction, and several other Vocational Teachers in the school, frequently sharing the same facilities. As indicated, these may all be plus factors for Agricultural Education, but they are new factors and must enter into trying to answer the question, *Whither Agricultural Education?*

May I suggest that I believe that the first "answer" to the question is that we *really* try to develop truly *local* programs of vocational agriculture. Yes, I know that we have been talking about that since 1917. However, our "guidelines" have usually been so strong until the local people are smart enough to learn what will be acceptable before wasting time on planning "their" program. The truth of this was seen in one state when the state leaders attempted to require a Local Plan much as the State Plan has been used through the years. (Maybe the analogy is a good one, since state leaders have learned that they must go to Washington to defend anything in their State Plan that is really different from the traditional programs.) But, as the proponents of creativity in educational programs point out, we must have an Open System rather than a Closed System if we are to encourage anything really different than what has been done in the past.

(Continued on next page)


Cayce Scarborough

Theory and Practice

The theme this month is centered on the 50th Anniversary of the Smith-Hughes Act. Here in the middle of the anniversary year, we pause just long enough to see how some of the earlier leaders looked at the problems of their time and how they tried to solve these problems. Interestingly enough, it appears that they had some crossroads in earlier years too. In seeking their answers to the problems they seem to differ in one major respect; that is, they seem to use philosophy in analyzing the problem and seeking a solution. Note particularly the articles by Professors W. F. Stewart and A. M. Field in the publication, *Whither Agricultural Education.*

In a section "A Philosophy for Agricultural Education", his article in the above publication, Professor Field said, "*Education in agriculture must peer into the future if it is to maintain a worthy leadership for youth. The philosophy of agricultural education must be a philosophy of change. It must change more rapidly than agricultural practices, otherwise it cannot lead.*" This was 30 years ago. Too bad that the leaders in charge of developing state and national programs could not hear and heed what Professor Field was saying.

Speaking of Professor W. F. Stewart, a letter from one of his daughters following his death tells me that she recalls the great pleasure that he got from editing the *AgEd Magazine,* nearly 25 years ago. By the way, you who have used Dr. Stewart's Parliamentary Procedure booklets will be interested to know that they are still available. Write C-Op Printing Co., 173 Montgomery St., New Concord, Ohio 43762.

(Continued on next page)

THEORY AND PRACTICE

(Continued from page 3)

It seems that we need to keep alive our interest in *terminology* as we move into new programs and revise old programs. As I have insisted in these columns, I believe that our difficulty in terminology is deeper than a dictionary definition. We are actually dealing with concepts. For example, we seem to have difficulty using the term *Agricultural Occupations*. It would seem that this term should mean to all of us the entire range of occupations that had enough agricultural flavor to be so labeled. Some make this more difficult by insisting that the farm be the starting place for all other terminology. Such insistence sets up a dichotomy and leads us to saying "Off-Farm", or worse, "Non-Farm". I do not believe that the term *Production Agriculture* will help either. This too sets up a dichotomy of other agriculture being non-production, which leads to still more trouble. There is production agriculture in Ornamental Horticulture, Forestry and all other growing plants and animals and even in processing. See the editorial on the Instruction Areas and Occupational Classification for further confusing thoughts on this subject. Your attempt to clarify these matters will be published in Letters to the Editor or in a Guest Editorial—if you will let me hear from you.

One of the neatest jobs of publishing a magazine that I have seen is *The Georgia Future Farmer*. Clearly, this is the work of a Pro. Upon congratulating State FFA Secretary J. E. Dunn on this magazine, he readily admitted that he did have the able help of a trained journalist. If you want to see this magazine as well as the "Green Thumbs" story of the Douglasville Vo Ag program, write Mr. Dunn at the State Department in Atlanta for a copy of the Feb.-Mar. '67.

Speaking of Agricultural Occupations, there is still another area that we need to be thinking about and including in our planning. Dr. Donal Super insists that *Career Patterns* are often more important in the overall work of a person than Placement in an Occupation. That is, we may not need to evaluate our educational programs so much on placement in *AN* occupation, as to see the career pattern ahead of the person. For example, it might be well that a young person *not* remain in the occupation in which he started upon leaving a vocational program. In fact, if he does well, he will be climbing up some sort of career ladder. Dr. Super also points out that many careers, particularly those in the unskilled class, are by nature short-term jobs. Again, a closer look at *the person* than at *the program* might help us here.

There is still much concern on the part of some for the continuing downgrading of Agricultural Education positions in the U.S. Office of Education. L. C. Dalton, State Supervisor, New Mexico, and President NASAE, has publicly expressed alarm at the situation. If you have suggestions for action write Mr. Dalton at Drawer V, University Park, New Mexico, 88001. As the saying goes, "It may be later than you think."

Missing in the May special on FFA was the story of Illinois FFA Programs in International Understanding. We had part of the story from George Irvine, Tonica, and have since received further information from Ralph Guthrie and Don Coil of the State FFA. We will get the story complete and in a future issue of the *AgEd Magazine*. Maybe other state associations or local chapters have exchange programs in other countries. Let me hear.

WHITHER AGRICULTURAL EDUCATION?

(Continued from page 3)

Truly *local* programs of vocational agriculture might not be as *"dangerous"* as some believe. Consultant help is needed; not to tell the local leaders what to do but to help them in developing effective programs in vocational agriculture. No longer are any communities isolated with needs separate and apart from any other community. Mobility of people tend to merge needs of different communities. Yet, it is extremely important that the *start* toward meeting these common needs be made in the community setting, not in the state headquarters or in Washington. Experience in working with local leaders in developing local programs indicates that it is really a cooperative undertaking demanding the best educational leadership that we can muster. The old idea of every program of vocational agriculture being essentially the same, if it is to be considered "A Complete Program" must be abandoned. A complete program for one community may be entirely different from another—in fact, the use of the word "complete" is misleading, unless we have an extremely limited concept of the term.

Finally, it is suggested that "Whither Agricultural Education" in the years ahead must be answered in relation to other vocational education. It appears that we must learn better how to work with school administrators and other co-workers in areas of vocational education for a total program. Maybe the term "A Complete Program" should be applied to *all* vocational education, an important part of which would be vocational agriculture for interested boys, girls, and adults. The setting would be the elementary school, the junior high school, the senior high school, the technical institute and community college.

Cayce Scarborough

In looking over some of the older publications in preparing this anniversary issue, it is interesting to note how many of these gave thought to problems very similar to those we face. This was noted in the lead editorial. Two publications noted were *Vocational Education and Changing Conditions*—Changing Economic and Social Conditions and Their Effect Upon Vocational Education (1934) and *Interpretative Science and Related Information in Vocational Agriculture* (1936). Pretty modern, huh?

On occasions when I have spoken somewhat critically of some of our programs and some of our leaders, I have been accused of lacking in respect for our earlier leaders. On the contrary, as indicated in these columns, I admire and respect our leaders who have already stood the test of a short period of history. My concern has been that we do as well *today* as they did *yesterday*. In short, I think that the best way we can honor the pioneers of the past is for us to be pioneers to the future. I believe that the major problem is to clarify the issues and the problems and try to solve them *within the new settings* we have rather than clinging to the old that was good for another time and their setting. Agree?

Thanks for your communications. See you next month.

Cayce Scarborough

FORMER EDITOR AND PIONEER LEADER DIES

Dr. W. F. Stewart, Professor Emeritus, Ohio State University died earlier this year while in Puerto Rico visiting one of his daughters. A former Editor of *Agricultural Education Magazine*, he was instrumental in establishing our professional journal. One of his greatest joys was in working with the *AgEd Magazine*.

Perhaps Dr. Stewart's greatest pride and joy, outside his own family were "his boys". These included not only most of the teachers, supervisors and teacher trainers in Ohio, but doctoral students scattered throughout the world. Dr. Stewart kept in personal touch with many of these graduates through the years.

Although Dr. Stewart was probably known best for his PROBLEM-SOLVING approach to teaching, he may have contributed most to the thinking in earlier years through his emphasis on the person and his total life. While many of our leaders concentrated on agricultural practices, Dr. Stewart was insisting that we be concerned about one's concept of a "complete life", a "well-rounded life." More than 30 years ago, he was asking the modern question, "What are the needs of life in agricultural vocations?" His contribution to the series of articles back in the '30's called WHITHER AGRICULTURAL EDUCATION? was along these lines.

Guest Editorial —

WE SHOULDN'T TRAVEL ALONE

J. C. Atherton, Teacher Education, Louisiana State University

An unusual amount of attention is being focused upon the current program of education in vocational agriculture. Perhaps the area receiving greatest scrutiny from the critics is the in-school or all-day program. It has been examined, dissected, condemned, defended and glorified by persons from many backgrounds. Some had axes to grind, while others were upholding the efforts which had gone into their life's work. No doubt, many persons holding a variety of positions covering the value of vocational agriculture have been sincere in their expressions of faith, or lack of it.

We should readily admit that our field has not reached the epitome of perfection, as this is self evident. However we need not apologize for our honest efforts which are directed toward the improvement of the educational venture. Our problem is one of assisting the profession in its metamorphosis from training individuals solely for a production farming emphasis to a much broader field of endeavor embracing agriculture in its totality.

There are some in our field who say the original intent of the Smith-Hughes Law was broad and included training for employment in the entire field of agriculture. The Act was given a much narrower interpretation, and even today there are some who cling to the original interpretation as though it were sacred and hold that any deviation from it is a sacrilege.

Within the past several years interest in updating vocational agricultural education has been evidenced in all parts of the nation. The Congress showed its concern through passage of the Act of 1963. Educators in the various states have made some steps toward program change. This ranges from the talking stage through research, pilot programs, demonstration centers, to completely overhauled curriculums on a statewide basis. A large question still facing agricultural educators is: what form should the all-day curriculum take and how can full implementation and acceptance of this be brought about?

As educators we have been confronted with the problem of preparing individuals and communities to make the changes needed to bring vocational agriculture in tune with reality. Assistance must be forthcoming also in assisting those in the field who are directly concerned to make the transition which is needed so badly. This will tax our ingenuity and require the best leadership that we can muster.

It is the philosophy of some persons that experimentation, preparation of teaching materials, study and a general reorientation of members of the profession of education in vocational agriculture is all that is required to assure an effective up-dating of the program. To a large degree our efforts have been concentrated in these areas. It seems to the writer that those who stop at this stage are only partially right. No fault is found with these efforts or the intent behind them. Although we are living in a highly scientific age, one of our basic problems is still sociological.

For years we have majored upon preparing youth for farming. Not too much attention was given to the occupational objectives of the trainees or of their destination following their removal from the secondary school through graduation or the drop-out route. Justifiable pride was taken of the increased efficiency of the farmer and the continued abundance of food and fiber which permitted this nation to alleviate suffering in various parts of the world through sharing. Thus the status quo in vocational agricultural education was maintained, justified, and defended. Critics outside the profession were dismissed without much serious attention being given to their line of reasoning. A few visionaries within could see the handwriting on the wall also. But their proposals were usually disposed of too with a shrug of the shoulder, a few glib remarks, and little serious thought or study. Hence, we find ourselves out of step with the times and in disfavor with various groups including elements of the educational institution. Putting it another way, one may say that our image is somewhat tarnished. Yesterday's home runs will not win today's ball game; so we must revamp the "team" so that it is set for the current season.

Another Editorial —

Instruction Areas or Occupational Classification?

Is Teaching Vocational Agriculture An Agricultural Occupation?

How do we in Agricultural Education arrive at the *official* Classification of Agricultural Occupations? Although the last list that I have seen was marked "For Discussion Purposes" (11/7/66), it appears to be the official document. On the document as part of the heading is this: "For Reporting Purposes on Forms OE-4045 and OE-4048". That sounds like a paper from the U.S. Office of Education that has already cleared the necessary hurdles to become official. We have tried to keep up with this development and to keep the readers of *Agricultural Education* informed, because we believe that this is an important development and may influence what every teacher of vocational agriculture does. Certainly it will determine how he officially reports what he does. So, we will attempt to review the development as we have been able to keep informed.

Hearing indirectly about the development of Instruction Areas in Agriculture, I asked Dr. Glenn Stevens, Pennsylvania State University, to write an article for this magazine on this matter. He did and the article appeared in November, 1966, along with a picture of the *Ad Hoc Committee for Agriculture*. The picture along with information on the work of the committee was furnished by Dr. James Hensel, Center for Vocational Education, Ohio State University. Mr. Neville Hunsicker, Chief, Agricultural Education, U.S. Office of Education, has also been asked to make any additional contribution so that readers would have full knowledge of the proposals. AVA Vice President Floyd Johnson cooperated in the work of this committee. With this setting, let's see what has happened.

According to the article by Professor Stevens, the purpose of the list of Instruction Areas was to serve as a guide.

> When published, the list will be intended to be used only as a guide by individual states. Adjustments to meet regional needs should be made. The instruction areas in agriculture tentatively are being suggested also as the classification for reporting individual student occupation objectives.

It was the latter part of the above statement that has caused some of us to follow the development of these areas. In response to a MEMO from the U.S. Office, our Teacher Education Department developed a list of areas and sent to Mr. Hunsicker. I know of some others who responded and I presume that a number of others also responded. In spite of these responses and the work of the committees, it appears that *the list of areas remain essentially the same as the first list that was issued.* So, the process of trying to get suggestions and participation from the field seemed to be there, but if any worthwhile responses were received they have not yet been incorporatd into the listing.

So what? There are two major concerns that I believe deserve our attention and *action now.*. It may already be too late for the first official list, but it is never too late to make some changes if we can decide that they are really needed.

The main concern is that the listing of the areas is too long on the one hand, while still not including a major agricultural occupational objective. We need a listing that everyone can readily know and talk about. In the 8 areas now listed there are duplications and overlapping, making it difficult to clearly understand and explain to others considering entering the program. (How many of you can name the 8 areas?) The major area omitted entirely is that of Agricultural Professions. Of the many listings that I have seen, I suggest that one being used on a brochure in Georgia comes nearer meeting the objection raised here. This listing is given in the adjoining column for your information and reaction.

(Continued, opposite page)

*SOME JOB OPPORTUNITIES IN AGRICULTURE**

Agricultural Production

Seed Grower
General Farmer
Crop Specialty Farmer
Dairy Farmer
Fruit Farmer
Livestock Breeder
Livestock Farmer
Poultry Farmer
Truck Farmer
Farm Worker
Farm Equipment Operator
Farm Manager and Foreman
Nursery Operator and Flower Grower
Landscape Contractor
Hatchery Operator
Turf Grower
Tree Farmer

Agricultural Business and Service

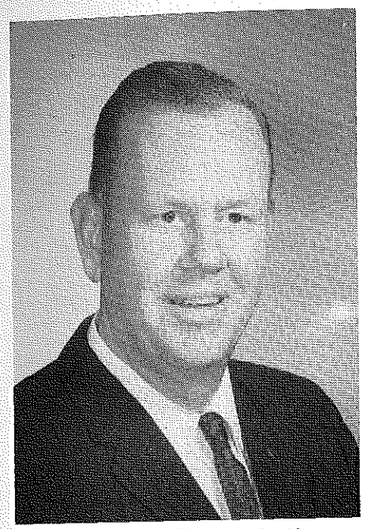
Fertilizer Salesman
Dairy Technologist
Farm Machinery Salesman
Farm Supply and Equipment Store Manager
Feed Mill Operator
Custom Farm Machine Operator
Farm Produce Buyer
Poultry Inspector
Veterinarian Assistant
Artificial Inseminator
Livestock Grader
Timber Buyer
Nursery Production Worker

Agricultural Profession

(*Most of which require college and graduate school study*)

Landscape Architect
Agricultural Writer
Agricultural Chemist
County Agent or Farm Demonstrator
Agricultural Engineer
Teacher of Agriculture
Veterinarian
Agronomist
Soil Scientist
Soil Conservationist
Ornamental Horticulturist
Forester
Animal Husbandman
Poultry Husbandman
Plant Pathologist
Economist

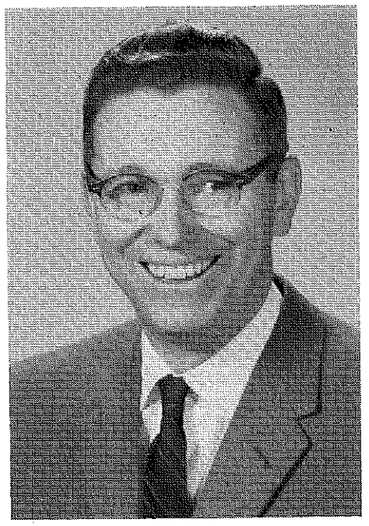
*From "A Look at Vocational Agriculture in Georgia's High Schools", a brochure from Vocational Education Division, State Department of Education, Atlanta, Georgia.



CONGRATULATIONS, MR. PRESIDENT!

On July 1, 1967, Floyd Johnson breaks another record. He is rapidly accumulating a long list of FIRSTS. He will become the first teacher of vocational agriculture to be AVA President. In fact, his firsts in AVA activities will be extremely difficult to match or exceed. However, as the athletes say, records are made to be broken, so Floyd would join the Editor, I am sure, in saying to any young teacher that he should certainly try to break the Floyd Johnson record! But, let's admit that it won't be easy.

There will be much more said about the AVA President in the August *AgEd Magazine* when we feature *Our Professional Organizations.*



NEW SPECIAL EDITOR

Howard Sidney is the first Special Editor for Post-Secondary Agricultural Education. Howard is Chairman, of the Agricultural Division, Agricultural and Technical College, Cobleskill, N.Y. He has been asked to help us keep in touch with the rapidly developing post-secondary programs in Agricultural Education in the Technical Institutes, Community Colleges, and other types of institutions throughout the country. Teachers of vocational agriculture and other leaders in all areas of Agricultural Education need to understand all programs and how they are interrelated.

Teachers and leaders in post-secondary programs in Agricultural Education are invited to submit articles or other ideas for our professional journal to Howard Sidney at Cobleskill.

INSTRUCTION AREA OR OCCUPATIONAL CLASSIFICATION?

(Continued from page 6)

The traditional difficulty of clearly listing Agricultural Professions as an occupational objective should not prevent our listing this area if it is needed, and I believe that it is greatly needed for many reasons. As indicated in *Theory and Practice* in June, it is ironic that we are saying that teachers of vocational agriculture are key persons in recruiting for future teachers, yet the profession is not even listed in Classification of Agricultural Occupations. The only reference to the profession of teaching vocational agriculture is under 01.99 *Other Agriculture* a. Teacher. As indicated in the Georgia listing, I believe that the area of Agricultural Professions should be prominently made. Furthermore, if teachers of vocational agriculture are to get any "college-bound" youth in their classes, I believe that the Guidance Counselors should know that vocational agriculture is indeed a good beginning for the young person interested in pursuing one of the many attractive Agricultural Occupations requiring one or more college degrees.

Whether or not you share my concern in this matter I would be pleased to hear from you. If you think this matter worthy of further discussion I would like to publish your letter in these pages.

Cayce Scarborough

Book Reviews

Gorman, John A., THE WESTERN HORSE: ITS TYPE AND TRAINING, 5th Ed., Danville, Ill. 61832: The Interstate Printers & Publishers, Inc., 1967, pp. 452, $5.75.

This book gives a step-by-step, clearly explained, and well illustrated description of the techniques and principles covering all aspects of the subject, from gentling the foal and training him to lead, to training the finished riding horse. The author discusses the reasons why the methods work—why and how horses respond to various stimuli.

The book is divided into the following parts: (1) Training, (2) Recreation and Competition, (3) Breeds and Types of Western Horses, (4) Shipping and Marketing Horses.

The growing interest in showing, training and riding horses is rapidly expanding. To train a horse the trainer must himself develop self discipline and self-control, responsibility and consideration.

Walter W. McCarley
Michigan State University

Brickbauer, Elwood A. and *W. P. Mortenson.* APPROVED PRACTICES IN CROP PRODUCTION. Danville, Illinois 61832: The Interstate Printers and Publishers, 1967. xx+ 397 pp. $3.75.

A survey of approved practices in crop production. Newest in the twelve volume set of Approved Practices books and replaces *Approved Practices in Forage and Feed Production* and *Approved Practices in Producing Grains and Potatoes.*

Organized in three parts:

I—Feed, Forage Crops, and Grasses
II—Grain, Fiber and Root Crops, and Tobacco
III—Weeds, Insects, and Diseases

An 11-page glossary explains the meaning of terms commonly used in crop production.

Approved Practices in Crop Production is practical, easy to understand, and to the point. Pictures and illustrations add to the effectiveness of the book. Should be a valuable reference for high school students of vocational agriculture.

The authors are associated with the College of Agriculture, University of Wisconsin.

Floyd L. McKinney
Michigan State University

MEETING THE CHALLENGE OF AGRICULTURE

PHIL NEILSON, Vo Ag Teacher
Tucson, Arizona

We, in Agricultural Education, must make several changes to meet the challenge of the NEW Agriculture, which is not only expanding, but dynamic in its growth.

Here at Amphitheater High School in Tucson, Arizona, we recognize the problems of change in Agriculture and the rural community. The following causes seem paramount:

1. A shifting in the local community from a rural to an urban population.
2. A declining in the number of farmers and workers in production agriculture.
3. A losing of tillable land in the community due to urban sprawl.
4. A crowding out of livestock operations due to county-wide zoning.
5. A de-emphasizing of "vocational" education in the high school because of an "academic" and "scientific" college-preparatory curriculum.
6. An old image of Vocational Agriculture and FFA boys as just "dirt" farmers.
7. A minimizing of Vocational Agriculture in a large comprehensive high school because it is Vocational and a minority of students take it.
8. A rapid technological advance in agriculture which is difficult to keep up with.

There are perhaps many other problems in agriculture, several of which are local, that have complicated the teaching of agriculture in high schools. However, if we want to keep our departments, obtain our share of the monies from the VEA 63, and train agriculture job entry personnel, we must change.

Bold Steps

In our department, we have taken several bold steps to meet this challenge of a changing agriculture. Some of the things we are doing are commonplace, but necessary. Now the department is a two-man operation with two pilot programs, one in Vocational Horticulture, the other in Vocational Agricultural Mechanics. These programs are presented in response to community need, the national center's research, and the two teachers' specialization. Both programs are set up as cooperative on-the-job training situations. The lack of student pre-co-op preparation and a depressed economic situation has lessened the effectiveness of the beginning program. However, interest in Horticulture and Agricultural Mechanics has been stimulated in the students and the community.

This year we introduced a new course in Conservation and Outdoor Recreation. It was started because of student interest and the need for personnel to conserve our renewable resources.

All three of these courses are the first of their kind in Arizona high schools. In the other agricultural sciences and agricultural mechanics courses, we have begun to develop large comprehensive units relating to the study of principles and practices. No more will it be a two-day inconclusive unit on "How can I treat my diseased corn," but a large comprehensive unit called "The Principles and Practices of Plant Pathology."

Many specific practices are changing every year; hence, principles become the best method of learning the practical. Agricultural Mechanics (including basic, advanced, and vocational courses) are now taught separately to allow flexibility in students' schedules. We have printed a brochure to acquaint counselors, prospective students, and people of the community with our new image. The brochure contains (a) a description of the department, (b) a description of Vocational Agriculture, (c) a list of career opportunities, (d) a list of courses offered and their descriptions, (e) definitions and examples of supervised agricultural practice (both projects and work experience), (f) an explanation of FFA (its leadership training and judging contest), and (g) scholarships available to college-bound Vocational Agriculture students.

With the introduction of new courses we are opening classes for the first time to girls. Several are honor students with a definite interest in agriculture.

Another challenge brought about by the forementioned problems is the development of satisfactory "supervised agricultural practices." Projects that have improved our situations here are:

1. Raising of pheasants for game reserves and exclusive restaurants.
2. Breeding and showing of mutton-type sheep, particularly for a large 4-H and FFA market.
3. Raising of Mexican June corn — a specialty crop used in the making of tortilla flour and Mexican foods.
4. Truck-cropping for the city markets.
5. Growing hay for the large number of pleasure horses in the area.
6. Bee-keeping and other small animal enterprises.
7. Growing of specialty nursery plants.

Work experience has been developed individually and cooperatively. Individual work-experience programs have been in:

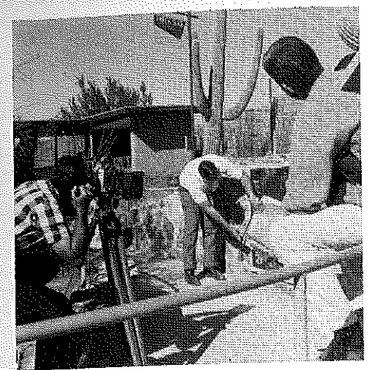
1. Agricultural sales and service.
2. Yard maintenance.
3. Agricultural machinery sales and service.
4. Nursery and landscaping.
5. Poultry, swine, cattle, and apiary operations.

Cooperative projects have included:

1. Installation and maintenance of a 15-acre polo field.
2. Large landscaping and grounds maintenance jobs.
3. A co-op land laboratory.
4. A co-op tract for field crops.
5. Experience on a school lawn and in an outdoor gardening area.

The extended courses and supervised agricultural practice have brought about a revision and expansion of teaching units in agricultural careers. Student experience has been enhanced by the use of work-study laboratory assistants. These assistants have not only helped the teacher in preparing educational experience for his students, but have also gained an educational experience themselves unobtainable elsewhere. The laboratory assistants have helped to develop a herbarium and maintain various land laboratories.

Robert E. Julian, head teacher, made a comprehensive survey to determine what further changes are needed in our program to meet the needs of agriculture in our locality.



Mr. Phil W. Neilson (center), teacher of agriculture, explains a soil profile exhibit at the Arizona-Sonora desert museum while Richard Condit, student of conservation and outdoor recreation, observes and the photographer for Cornodo Films zooms in on the discussion.

Neville Hunsicker, Chief, Agricultural Education, U. S. Office of Education, and G. A. Hyma, Personnel and Organizational Manager, Ford Motor Company, are attending a meeting of the Educational Policy Committee for the Farm and Industrial Equipment Institute. Mr. Hyma is chairman of the national committee. The meeting was held at Cobleskill (N.Y.) College. The purpose of the committee is to enroll the assistance of leaders in industry in meeting the needs of technical education and preparing graduates for technical positions.

The FFA'S Role

The FFA is changing and must continue to change to keep up with dynamic agriculture. We try at Amphitheater High School to emphasize the new role of the FFA. The boys, in conducting their safety campaign, are concentrating on areas of concern to an urbanized and scientific agriculture. For example, they are promoting safe use of chemicals and lawn power tools. The Chapter works on money-making projects that are a service to the community, such as clean-up of vacant and installation of lawns. Contests and leadership activities play an ever-increasing role in the FFA. Contests that involve non-farm agriculture-related activities are stressed. Leadership activities from parliamentary procedure demonstrations before civic clubs to supervision of divisions of the County Fair are encouraged. Public speaking by FFA members on topics of "Agriculture is More Than Farming" and educational displays on the same subject have begun to show benefits.

Many may say that two years is too short a time for the radical changes of putting three new courses and enrolling girls into a department. It is true that these changes have not been without headaches. In order to accomplish all these changes at once, both teachers had to take an overload in teaching hours, then spend their "spare" time in developing the new courses and carrying out related duties. Because of the rapid change in curriculum, the guidance of students who are vocationally orientated and of capable ability has not been what we had wished. Also, additional facilities are needed. We would like a large greenhouse, a small animal laboratory, and a field-crop laboratory. Then, sometime in the future, we hope to expand into adult education courses in Horticulture and Agriculture Mechanics, Now, we are in the process of starting an advisory committee. Also, we are preparing a documentary motion picture to publicize our program and explain our practices to others.

Our efforts in meeting the challenge of a new agriculture have been fruitful. We have had a 50% increase in student enrollment (15% of that increase is upper-classmen who have not before taken Vocational Agriculture), a substantial increase in number of dollars earned and hours worked by students with supervised agricultural practices, a larger percent of honor students enrolled in agriculture classes, and a more receptive community to the need for training in occupations of agriculture and an appreciation for the industry as a whole.

Ralph J. Woodin

Crisis Looms —

Shortage Spurs Recruitment Efforts

RALPH J. WOODIN, Teacher Education
The Ohio State University

The continuing shortage of vocational agriculture teachers may develop into a major crisis in agricultural education in the United States unless prompt, concerted action is taken in each state. This was the considered judgment of the Professional Personnel Committee in Agricultural Education at their meeting in Denver during the American Vocational Association in December, 1966.

A study recently completed at The Ohio State University provides further support for the committees' conclusion.[1] The seriousness of the teacher shortage is indicated by the fact that last year with 1,077 positions to be filled only 706 newly qualified vocational agriculture teachers entered the profession. By October of 1966 this deficit of 371 teachers had been reduced to 162, but of the nations 10,325 vocational agriculture teachers, 252 were teaching with temporary or emergency certificates. The study also shows that 41 states had a deficit in supply of teachers entering vocational agriculture classrooms.

1966 Shortage Surpasses 1965

Table 1 shows that 162 teachers were needed but unavailable in October of 1966 while a year earlier, in 1965, 120 teachers were needed beyond those available. The table also shows that 252 teachers were teaching with temporary or emergency certificates in 1966. Added together, this represents a shortage of nearly 40% of the total number of teacher replacements needed. The teacher turnover of 10.4% for teachers of vocational agriculture which is shown in table 1 is higher than for any other group of teachers according to recent studies.

[1]Woodin, Ralph J. "Supply and Demand For Teachers of Vocational Agriculture In the United States for the 1966-67 School Year." Special Study, Department of Agricultural Education, The Ohio State University, Columbus, 1967.

Sources of New Teachers

The new supply of teachers of vocational agriculture comes from 76 different colleges and universities which are approved for the preparation of such teachers. Last year they produced 1,151 teachers—more than enough qualified persons to fill the 1,077 teaching positions. The catch is that not all those qualified decided to enter teaching. Last year only 61% elected to teach, and this percentage grows smaller each year. As can be seen in table 2, more than six other fields compete with the public schools for the services of these graduates.

In looking to the future, it would seem likely that competition for agricultural education graduates would continue, and that the per cent of those entering the teaching of vocational agriculture might be even lower than the 61.4% reported for 1965-66.

Based on returns from 75 of 76 institutions in 49 states qualified for preparing teachers of vocational agriculture.

TABLE 1

Numbers of Teaching Positions in Vocational Agriculture in the United States in 1966

Item	Number	Per cent
Total positions as of 10/15/66	10,325	100.0
Replacements required during 1965-66	1,077	10.4
New positions added during 1965-66	265	2.5
Teachers needed but unavailable 10/15/66	162	1.6
Teachers with temporary certificates	252	2.4
Estimated number of teaching positions by 1970	11,257	109.0

TABLE 2

Occupations of 1965-66 Graduates in Agricultural Education in the H.S.

Occupation	Number	Per cent
Teaching vocational agriculture	706	61.4
Graduate Students	115	10.0
Other work	94	8.2
Armed Forces	81	7.0
Teaching other subjects	62	5.4
Farm Sales, Service or Supply	62	5.4
Farming	31	2.6
Total number	1,151	100.0

College Enrollments Up— Ag Ed Down

The changing pattern of enrollment in colleges of agriculture and in departments of agricultural education is shown in a 1967 study of enrollments in 14 colleges of agriculture in the north central region. This study reported by Dr. Louis M. Thompson compares percentage change in enrollments in these institutions by five year periods from 1956 to 1966.[2]

TABLE 3

Percentage Change in Enrollments in Selected Colleges and Universities in the North Central Region

	1956-61	1961-66	1956-66
Total enrollment of universities	+20.3%	+47.1%	+76.9%
Total enrollment of colleges of agriculture	— 3.2%	+38.2%	+33.8%
Total enrollment in in agricultural education	—44.4%	+27.8%	—28.9%

[2]Thompson, Louis M., "Undergraduate Enrollment In Agriculture In the North Central Region of the National Association of State Universities and Land Grant Colleges," Special Study, Iowa State University, Ames, Iowa, February, 1967.

This study shows that total enrollment in agricultural education which had totaled 1,824 in 1956 had dropped to 1,015 by 1961, but increased to 1,297 in 1966.

These figures suggest that while some improvement has occurred in these states that it still is far from sufficient to meet present demands. At a meeting in March of 1961, twelve of the above states reported an anticipated shortage of 109 teachers as of July 1, 1967. On the brighter side, however, these states reported some increase in number of graduates. This year they expect to graduate 415 persons, while a year later they predict that 502 will be qualified for teaching.

Goals for Recruitment

It appears that recruitment efforts need to be directed toward a goal of having each teacher now in service guiding one of his promising students once every four years into preparation for teaching vocational agriculture. For the nation this would mean that, annually, 2581 vocational agriculture graduates would enter four-year college programs to prepare them for teaching. It could be expected that 80% or 2,065 would graduate. If 60% of these entered teaching this would provide 1,239 replacements. On the demand side, a ten per cent turnover would require 1,032 teachers and a three per cent growth in new departments would require an additional 309 teachers making a total of 1,341—still a few more jobs than candidates for them.

To sum it all up, a minimum recruitment goal for any state should be to have a number of future teachers equal to one fourth of the number of teachers in the state entering teacher education programs each year. Another way of saying it is that if every vocational agriculture teacher had one student enter vocational agriculture once in four years, our problem of teacher supply would be met.

These goals do not take into account the need for some selection among those qualified for teaching. Another new demand is for teachers for emerging agricultural programs in technical institutes and community colleges. These positions, usually filled from the ranks of teachers of vocational agriculture, create still more vacancies which must be filled.

Olen Joyner, left, agriculture mechanics specialist for the Oklahoma State Board for Vocational Education, listens to Ben Walcott, right, technical representative for Lincoln Electric, explain proper electrode manipulation to vocational agriculture instructor Harold Chitwood, Bennington. This part of the training received by teachers each summer to keep them abreast of new milking techniques.

A Promising Start

Most states have initiated new recruitment activities and improved and expanded past activities. Over forty states have organized formal recruitment commissions or committees. State teacher associations have lent support to scholarship funds, recruitment luncheons and a variety of activities. Departments of agricultural education have joined with their agricultural colleges in promoting recruitment activities for the college of agriculture knowing that the first problem is one of getting students enrolled in an agricultural college. Agricultural education clubs and collegiate FFA chapters have developed well-planned programs.

The NVATA has taken an active part in the recruitment effort. The association has encouraged many state association activities, and this year will make available to each state, a certificate recognizing Teachers of Teachers.

The impact of all of this activity must finally result in a larger number of promising high school graduates learning of the promise and challenge in teaching vocational agriculture. It can be assumed that the vocational agriculture teacher is the person who is most influential in this task.

The key role of the teacher of vocational agriculture in the recruitment effort is considered to be our "secret weapon." The Professional Personnel Recruitment Committee for Agricultural Education sees the tasks of those who would help in securing an adequate supply of vocational agriculture teachers as that of providing local vocational agriculture teachers with first, an appreciation of their own importance, and second, a continuing supply of facts, information, encouragement and materials to do the job.

Ag Teacher on Spot —

FARM OR COLLEGE?

— So is FFA

R. Lano Barron, Professor of Agriculture
Navarro Junior College, Corsicana, Texas

The emphasis on "establishment in farming" in the Future Farmers of America has led to the frequent criticism that the FFA keeps farm boys from going to college. Admittedly, such emphasis is a major basis of awarding the State and American Farmer Degrees. And the vo-ag teacher, who has been proud when one of his Future Farmers received such recognition, only to find that that young man wanted to continue with his farming program after high school graduation, while the parents wanted him to go on to college. They had opposing points of view, about which there was seldom opportunity for compromise, on a decision that would materially affect the future of the young man.

The student had taken his teaching well and was progressing with expansion plans for full-time operation . . . and he looked to the teacher to back him in his efforts to convince his parents that he was doing the right thing.

On the other hand, the parents, above all else, wanted to see their son get a college education. Their son's Advisor whom they had learned to respect, had a college education . . . so they looked to that Advisor to help sway their son to go on to college like he did. It is an awkward situation that undoubtedly has happened innumerable times, for what we do often speaks louder than what we say. And whose "side" should the vo-ag teacher take? With the tremendous changes that are taking place in agriculture today, we would have to conclude that "no one knows for sure . . ."

FFA and College

Whatever the decision might be in a single case, the "indictment" against the FFA should have a broader base. For if the FFA is keeping its members out of college then one would expect our college enrollment in agriculture to be largely of farm boys who have NOT been members of the FFA. With this thought 72 students majoring in agriculture at Navarro Junior College in Central Texas were asked to respond to a brief questionnaire.

Of the 72 respondents, 62 had averaged slightly more than three years of vocational agriculture in high school, while 61, or six out of seven, had been members of the FFA an average of 3.36 years. Of this number, 10, or one of every six, had been awarded the State Farmer Degree and 20, or approximately one-third, indicated they were planning to teach vocational agriculture. The next largest occupational choice was ranching, obviously influenced somewhat by the fact that they expect to inherit some land.

Why Major in Agriculture?

When asked to list items in order of the importance of their influence on their choice of professions the former FFA members ranked the items in the following order:

1) "I like agricultural work"
2) "Being reared on the farm"
3) "Study of vocational agriculture"
4) "My FFA activities in high school"
5) "I will inherit some land"
6) "Salaries of agricultural workers"

Of the 42 who listed the inheritance of land as an influential factor in their choosing a profession, 35 of them listed both their study of vocational agriculture and FFA activities as major influences. The 35 gave vocational agriculture an average rank of 3.60, FFA activities in high school an average rank of 4.66, and the inheritance of land an average rank of 5.06.

Conclusions

While the scope and procedure of obtaining the data above is subject to more scientific scrutiny, it does seem to indicate significantly, that vocational agriculture and the FFA have more influence on young men in choosing a profession-that-includes-college-training, than the inheritance of land. At least in part it seems to refute any "credit" the FFA might receive for keeping farm boys from college.

THEMES FOR THE AGRICULTURAL EDUCATION MAGAZINE

SEPTEMBER-DECEMBER 1967
Volume 40

September —TEACHING EFFECTIVELY
(High School—Post Secondary—Adults)

October —INNOVATIVE PROGRAMS
(Local Vo Ag Cooperative Programs)

November —OCCUPATIONAL EXPERIENCE
(In All Areas of Agricultural Education)

December —TEACHER PREPARATION AND CERTIFICATION
(Requirements B.S., M.S. Special Trends)

PRACTICAL CONCRETE WORK IN FARM SHOP

Heimer Swanson, Vo Ag Teacher,
Pipestone, Minnesota

An interesting project was added to our Farm Concrete Unit in Farm Shop at Pipestone High School this fall. We would usually expect to include the normal study and experience in Farm Concrete in this unit. This year, several of the students became interested in a portion of an Iowa State publication that described a method of casting and testing small concrete beams. After due consideration to the possible learning experiences involved, it was decided to include this in the class program. The references used were "A PRACTICAL COURSE IN CONCRETE" published by Portland Cement Association and "QUALITY CONCRETE" published by Iowa State University of Science and Technology at Ames, Iowa.

The Project

The class cast concrete beams 12 inches long by 1 inch wide by 2 inches deep. Ten groups of beams were cast with 7 beams in each group. Each of the ten groups of beams incorporated a different method of construction such as different water; cement ratios, curing methods, reinforcing methods, etc. Several of the students then constructed a beam tester according to plans from the above listed references.

About the middle of December, the curing period of the beams was completed and testing began. Since the numbers of beams tested for each method was in many cases somewhat limited, it is impossible to draw definite conclusions from the entire program. However, certain recommended practices in concrete construction were substantiated by the project and these will be briefly discussed here.

The Results

A six gallon paste was stronger than an eight gallon paste. It required 206 lbs. to break the beams from the 6 gallon paste as compared to 157 lbs. for the 8 gallon paste. The beams from the 4 gallon paste were slightly stronger than the beams from the 6 gallon paste.

Freezing weather during concrete cure was found detrimental to strength. One group of beams were cured outside during a cold snap in November. These beams broke at 160 lbs.

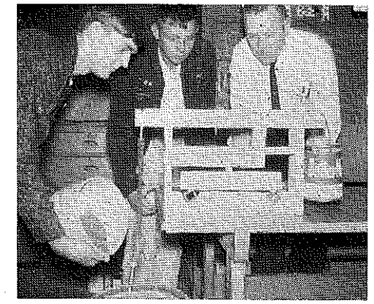
A 6-7 day curing period (or longer) is recommended since the strength of concrete increases with the length of curing time. With beams cured for the following periods—no cure, one week cure, and 28 day cure—the breaking strength of the beams was 170 lbs., 195 lbs., and 211 lbs. respectively. These were cured by placing the beams in pails filled with water and leaving them submerged for the required time.

When reinforcing is placed in a feeding floor slab, it is recommended that this material be placed toward the bottom of the slab rather than in the middle or top. In testing the beams, they were placed under strain only until a hair line crack appeared. Because of reinforcing, complete breakage did not occur. The results of our tests indicated that if the reinforcing material was placed near the top of the beam, (and the strain applied from above) these beams were only about 75% as strong as if the re-inforcing was placed near the bottom.

Several suggestions can be made from our experiences. A vibrator or a vibrating table would help to insure that the paste is uniformly placed in the form and that no pockets occur. Results from reinforcing didn't compare favorably to non-reinforced beams. The size of beam does not allow proper placement of reinforcement in the beam—it is placed too close to the edges and too close to either the top or bottom. The strength difference between top and bottom positioning can be compared, however.

The beam tester we made had an estimated mechanical advantage of 5.6 and an actual mechanical advantage of about 5. The suggestion in the reference that this be made of oak should be followed. A lot of strain is exerted on the tester during testing procedures.

This project turned out to be a very interesting and practical supplement to the regular course material.



The beam tester in action. Students Don Mitchell and Ed Tuinstra with their instructor, Heimer Swanson, are testing a beam to note the amount of weight needed to break it.

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The Editor

MECHANICS INSTRUCTION FOR TODAY

M. C. Knox, Supervisor Agricultural Education, Olympia, Washington.

Our changing needs in agricultural mechanics were brought into focus with the passage of the Vocational Education Act of 1963. Teachers of vocational agriculture were called upon to evaluate their present programs and decide what would be needed in new areas and for groups of people of a type new to them.

Much Changes, Same Basic Needs

There has been much change in the two decades since 1937, when students were to be taught the farm shop skills "necessary for the construction and repair to be done on the farm by the farmer with the tools to be found in the average farm shop." The foot pedal grindstone and hand crank emery wheel have been transformed to power grinders, the coal forge to gas heated forge and furnace, the hand saw has been replaced by skill saws, sabre saws, swing saws and table saws. Assembly of metal is by gas or arc welding rather than rivets, nuts and bolts. Concrete comes in a ready-mix truck and not a small portable mixer. One thing remains constant, we are still teaching people. Different kinds of people, perhaps, but people who have needs for agricultural mechanics instruction. Consequently, the problem remains the same—whose needs are to be met and how.

In the high school classes we have boys who come from the farm or ranch and intend to make a living from this source the rest of their lives. Then we have boys who are very interested in agriculture but who will find their vocation in off-farm agricultural occupations within business or through higher education. We also have many boys who are very interested in agriculture and the Future Farmer organization who will earn their adult living in a field other than agriculture.

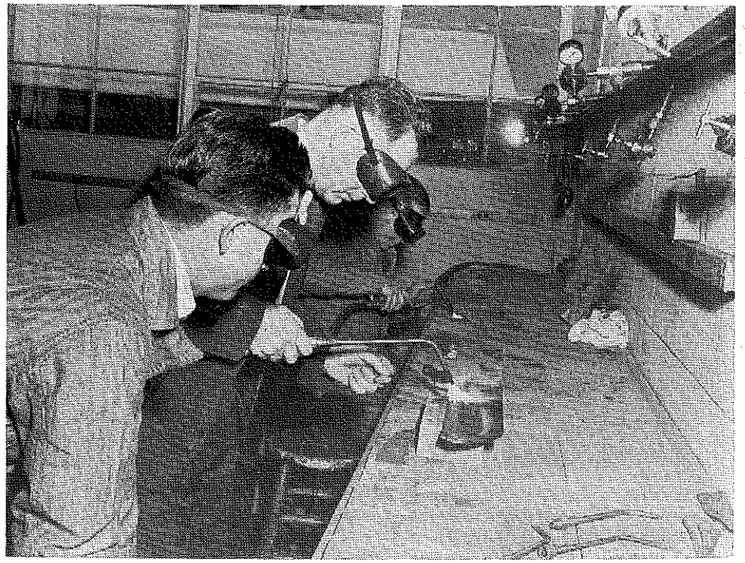
In our adult groups will be the young farmer who is just getting started and who needs to economize by doing his own repair or construction work. We also have the well-established farmer whose time may be worth more in the management of the mechanical phases of farming than in doing his own mechanical work. Further, we have post high school technical programs for people who wish to become irrigation equipment mechanics, farm machinery and implement repair men, parts men and sales people to mention a few. This, then, refines the problem of whose needs for instruction are to be met.

Regardless of the status of the person enrolled in vocational agriculture, whether it be in high school, young farmer, and adult classes, or post high, the teacher of vocational agriculture must analyze the needs of the enrollees. He must face the situation as it is in his own community even though many trainees may not remain in this community.

Skills Still Essential

Observing classes and talking to vocational agriculture teachers over the years convinces me that skills in all of the five areas of agricultural mechanics are essential. The stage at which they are taught, whether taught in the classroom, the shop, or the field, becomes very important.

In the high school the basic skills in the use of tools must come first. A boy who cannot use hand tools, power tools, welders and so on skillfully, is not going to do good repair and construction work later on. Much of our advanced high school shop instruction has been project centered. With more and more of our students coming from situations other than full-time farms, it would seem to be increasingly necessary to create programs that will continue the skills instruction throughout their high school days. Certainly a unit on small gasoline engines may replace the unit on the preventative maintenance of tractors in many communities. The important thing to keep in mind is that these basic skills will be of value in future years to the student who learns them well whether it be as a full-time farmer, part-time farmer, a worker in off-farm agriculture, or as a citizen with a home to maintain.

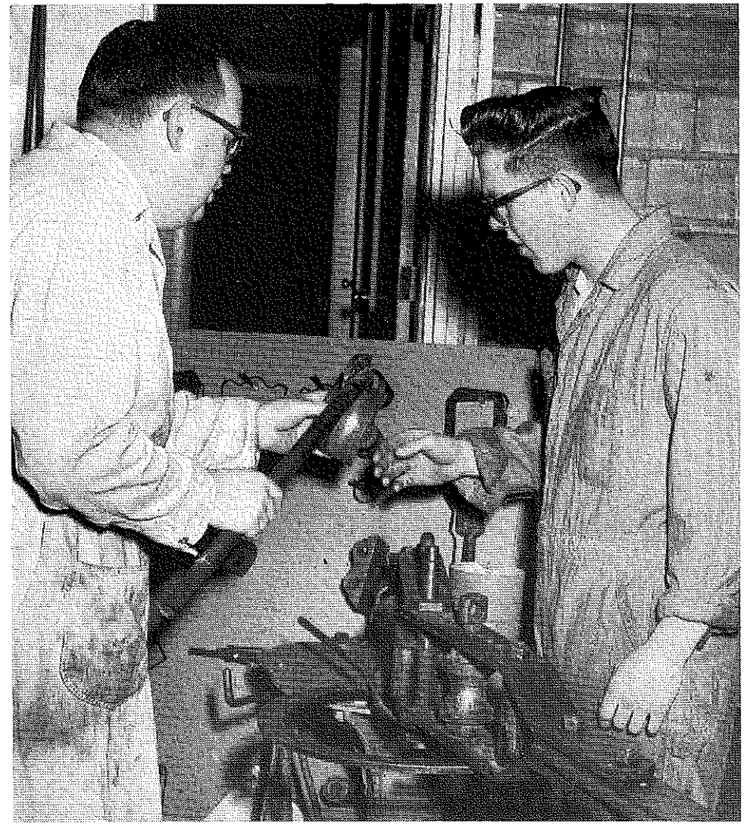


Vocational Agriculture Instructor, Robert Wallenstein, then at Centralia, observes the work of an adult student. The bank of oxyacetylent units makes excellent use of space in a modern shop.

The enrollees in a young farmer or adult class will express their needs adequately. Possibly, the expression of these needs led to the formation of the class. If they need the basic skill of arc welding to repair broken machinery in the field or to construct needed equipment, that is the kind of class it will be. If, instead, they need discussion with other farmers or resource people on whether to buy, rent, or custom hire a certain piece of machinery, then the class will be organized accordingly.

The post high school program will be constructed specifically to attain definite objectives for those who plan to become employed in a certain occupation. It will be taught by a person skilled by training and experience in this field of work. The facility will contain the tools common to the occupation in a modern shop or business.

Whatever the type of community, or the type of student who enrolls, we must be open to desirable change, building on the experience of past years and be ready to adapt our teaching plans to the needs of agriculturally inclined people in each community.



Pat Alleyn, Battle Ground, Washington, Vocational Agriculture Instructor, instructs student in the use of metal binder.

5½ Million Get Vocational Training

Before the Smith-Hughes Act was passed by Congress 50 years ago, there was no organized program—nationally, statewise, or locally—to teach youngfolks and adults skills in vocational fields. Since 1917, "vo-ag," "home ec," and "trade schools" have become familiar and highly rated terms to most citizens. Since World War II, training in many other vocations has been added.

Today more than 5½ million young people and adults are enrolled in some type of vocational education—in more than 17,000 schools. This is a mighty boost to our trained manpower—and womanpower—needs.

As we look ahead and recognize nature and speed of continuing change, we are bound to say that vocational training will be needed even more in the next half century. Vocational education will itself have to change as rapidly as the nation. For, to use a familiar example, a farm boy planning an agricultural career now needs to know not only how to grow corn but why corn grows, then how to sell it at a profit.

So in this fiftieth anniversary year, we commend and congratulate all who have a part in building, promoting, and perfecting modern vocational education—that we might have better workers, better citizens, and a better America. Vocational education has won the people's confidence and made a permanent place for itself. We predict that during its second fifty years, at a time when still greater emphasis will be placed on vocational skills and training, it will make an even greater contribution to education and to America.

—*The Progressive Farmer*, March, 1967

EMPLOYMENT OPPORTUNITIES FOR AG INSTITUTE GRADS

RICHARD COBB, Graduate Assistant, New Mexico State University

In September 1966, New Mexico State University initiated the Agricultural Institute, a two-year post-high school pilot program offering curricula in Agricultural Mechanics and Applied Horticulture.

A recent research project was launched to determine the number and type of employment opportunities in mechanics and horticulture available for students graduating from the program.

In October 1966, questionnaires were sent to 211 randomly selected nursery and horticulture employers in New Mexico and 153 randomly selected machinery and implement dealers in New Mexico and west Texas.

In Ag Mechanics

From the questionnaire responses, some definite characteristics in terms of salary and needed occupations have been suggested.

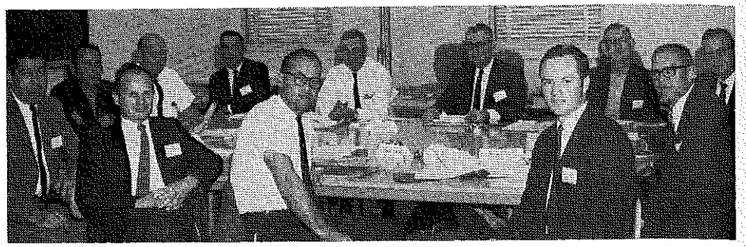
All employers indicated in the survey that they would hire a graduate of a two-year program at a higher salary than they would hire a high school graduate.

In Horticulture

Table II reflects the occupations most desired by the horticulture industry, but, does not provide data respective to the extensive number of family-owned and operated nursery businesses in New Mexico.

After compilation of data from the mailed inquiry instrument, nursery and machinery dealers were invited to the Agricultural Institute to further suggest methods and technical materials needed to prepare students for the mechanics and horticultural industry.

The thoughts from these men in the field supplemented with research survey results will be instrumental in determining the focus of curriculum and occupational objectives utilized in the Agricultural Institute.



A committee of machinery dealers from New Mexico implementing occupational research findings to a two-year post-high school curriculum in agricultural mechanics and applied horticulture at the Agricultural Institute, New Mexico State University.

TABLE I

SALARY AND EXPECTED JOB OPENINGS WITHIN THE NEXT THREE YEARS FOR AGRICULTURAL MECHANICS*

	Starting salary per week		Number of Openings in next 3 years
	Average	Range	
Tractor, Machine & Diesel Mechanic	$110	$75-140	190
Machinery Parts Clerk	100	60-125	42
Mechanic's Helper	79	70-80	31
Assemblyman	82	65-130	27
Equipment Salesman	123	80-150	26
Service Center Foreman	113	75-150	19
Machinery Parts Salesman	100	80-140	18
Welder	97	90-100	12
Machinery Fieldman	98	80-125	10
Tire Repairman	105	100-110	5
Small Gas Engine Mechanic	75	75	1
*(Based on 67% questionnaire response)			Total Jobs 381

TABLE II

SALARY AND EXPECTED JOB OPENINGS WITHIN THE NEXT THREE YEARS FOR APPLIED HORTICULTURE*

	Starting salary per week		Number of Openings in next 3 years
	Average	Range	
Nursery Retail Salesman	$74	$55-100	28
Landscape Gardener	79	70-100	22
Florist Designer	78	60-100	10
Golf Course Greenskeeper	106	85-150	9
Nursery Retail Manager	95	70-125	5
Greenhouse Grower	62	50-80	4
City Park Grower Apprentice	80	80	3
City Park Machine Operator	72	60-85	3
Budder & Grafter	85	80-90	2
Wholesale Order Filler	67	60-75	1
Land Contracting Foreman	70	70	1
Arborculture Dendrician	85	85	1
Ornamental Plant Broker	85	85	1
Golfcourse Section Foreman	105	80-125	1
Pest Control Foreman	120	120	1
City Park Foreman	94	94	1
*(Based on 30% questionnaire response)			Total Jobs 95

Guidelines for the Articulation of High School and Technical College Curriculum in Agriculture in the Years Ahead

The authors recently completed a search project[1] concerned with the study of the new off-farm agricultural education programs and their articulation with technical college programs in the same fields.

As the new high school programs increase in number and complexity, more of the subject matter and skills formerly taught at the two-year college level is being included in the high school educational programs. This increasing possibility of overlap and duplication increases the need for a longer look at the articulation process to maximize the educational benefit to students in relationship to costs.

Articulation is described as: ". . . coordination of effort in those areas in the fields where there are joint concerns and responsibilities between more or less independent units. Good articulation insures smooth transition, continuity of the educative process, efficient development of the pupil and maximum uses of resources."[2] Two-way communication is the most important medium of articulation.

The conduct of the study consisted of providing the opportunity, under controlled conditions, for the two-way communications between representatives of two-year colleges and high school teachers. The four emerging areas of instruction in agricultural business, agricultural mechanization, conservation, and ornamental horticulture, constituted the study areas. Representatives of State Departments of Education and four-year colleges were also in attendance to help in understanding the role of each group. In addition, a summary was made of the curriculum offerings at each level as to pupil selection, entry level jobs appropriate to those completing the programs, skills and competencies taught and curriculum content.

[1]Bail, J. P. and Wm. Hamilton. A Study of the Innovative Aspects of Emerging Off-Farm Agricultural Programs at the Secondary Level and the Articulation of Such Programs with Technical College Curriculum in Agriculture. U.S.D.E. Report 5-85-110, Jan. 1967.

[2]Seay, C. W. "High School and College Articulation," *The Bulletin of the National Association of Secondary School Principals*, Vol. 48, No. 293, September 1964.

A series of guidelines for improving articulation between high school and two-year college curriculum were developed as given here:

1. A Knowledge of Program Offerings Is Essential

Instructors at each level should be fully aware of the offerings in agriculture. Specialists in the instructional areas at the technical college should have copies of courses of study used at the high school level. The high school instructors should have catalogues of the technical colleges plus brief one-page summaries of objectives, course content, and related information of the major offerings.

2. Program Titles Should Reflect the Actual Content and Intent of the Training

The more specific the programs are labeled, the less misunderstanding should result. Most subject matter areas may have several major subdivisions. Unless a program is clearly designed to be general in content, it should give the specialized area within the major subject matter discipline which will be stressed.

3. Programs Should Have Clearly Defined Job Titles or Families of Jobs Which Graduates May Expect to Enter

The specific job titles or job families which graduates may enter should be listed. Students should be clearly aware of the jobs for which they are equipped by their training, whether upon graduation from high school or from the technical college.

4. Qualifications for Entry Into the Educational Program Should Be Spelled Out in Detail

The required previous education or courses, experience or background, as well as academic ability level needed (judged by standardized tests) at both levels of program, must be given. These statements should be listed as minimum requirements, recognizing that selection will be made in cases where more students apply than can be accommodated.

5. A Checklist of Skills and Abilities Needed by Beginning Workers in the Specific Job Titles Should Be Available

Adequate and thorough planning of courses necessitates knowledge of what workers do on the job. Research already completed, including follow-up studies of recent graduates, should enable course planners to provide meaningful educational experience in the classroom and laboratory.

6. Curriculums and Course Offerings Must Be Continually Evaluated and Updated

New demands upon workers and increases in scientific and technical knowledge require the instructor to keep abreast of changes in his specific courses or program fields.

7. Opportunity for Work Experience in Connection with the Program is Desirable

At the high school level, appropriate work experience is a required part of the program. In some technical colleges, summer experience or internship is required. Students should have opportunity to work in the field at an appropriate wage. Not only will this strengthen their formal course work but the exploratory experience will help students firm up career choices.

8. Students Should be Provided with Guidance and Career Information at an Early Date

Vocational and educational guidance should be a part of the program at all levels. Students should be aware of the opportunities and qualifications for continued formal education at technical and four-year colleges. In addition, the opportunity to progress on the job and to move to more responsible positions should be outlined. Both formal and informal study opportunities should be stressed.

(Continued on page 20)

Should Vo-Ag Departments Operate School Farms?

RICHARD LOBERGER, School of Agriculture, Wisconsin State University
Platteville, Wisconsin

School farms in some states are relatively new, while in other states they pre-dated the Smith-Hughes Act. In Wisconsin, vocational agriculture departments operating land for agriculture purposes have been increasing in number.

The operation of school farms provides the vocational agriculture department with an outdoor laboratory and may be very beneficial for instruction and demonstration of new techniques in agriculture. A major responsibility of a vocational agriculture department is to provide the farmers in the community with the latest in technical knowledge. This can be accomplished successfully, in part, through demonstration test plots on the school farms.

Many farmers are hesitant in employing new techniques on their home farms. They seem to take the position of letting someone else try these new methods first. The school farm can be beneficial to the farmers and with the use of twi-light meetings they can view the results of testing.

Many students enrolled in vocational agriculture do not possess a farm background. The reasons for this are the decline in the farm population and the increasing interest in agricultural occupations. These non-farm boys and girls can make excellent use of the school farm as a means of getting basic knowledge in crop varieties, fertilization, soil study, use of herbicides and insecticides, or any other cultures that can be carried out on school farms. Work experience programs for these students can be applied with the use of school farms. These programs will allow the students in vocational agriculture to meet the requirements necessary to qualify the department for federal aid.

Policies and Procedures

A study was conducted by the author to investigate the operational policies and procedures of vocational agriculture departments in Wisconsin utilizing school owned agricultural land in their total instructional program. Schools having school farms number 33 or 12 per cent of the total vocational agriculture departments in Wisconsin. All but four of the schools cooperated in the study.

A purpose of the study was to determine if vocational agriculture departments operating school owned land are receiving benefits enough to justify their use in an instructional program.

The major reason for operation of school forms was explored in the study. Some departments are interested in providing agricultural research and test data to the community or use the land for a classroom laboratory, while other departments would favor the major role of their land operation being that of a money making project for their F.F.A. chapter.

Questions often arise in regard to the operational procedures of vocational agriculture departmental land. How should the machinery be provided? The expense of purchasing machinery to carry out land operations may be detrimental to a successful operation. The students may provide the machinery from their home farms. If this is true, the question to be answered is whether or not they will be compensated for the use of the machinery. The local machinery dealers may work cooperatively with the vocational agriculture department in providing the machinery necessary for carrying out land and crop operations required. The labor and time element will be factors in successful operation of this program. The students will most likely do most of the work; but how much will be done by the instructor? Will his program permit him to spend endless hours working on the test plots? Certain crops must be planted while school is in session. Should the students be allowed school time to participate in field work? The use of Saturdays and after school time may be sufficient in certain cases. The summer work load of students on their home farms may not allow them to take part in any work necessary on the school farm during the summer months.

The final purpose of the study was to determine how these vocational agriculture departments secured land for their total instructional programs. Many high schools in Wisconsin have been built within the past 10 years. The Boards of Education of these schools often purchased more land than needed for immediate building space with the anticipation of future growth of their

Richard Loberger

school system. The excess acreage was then utilized by the vocational agriculture department. Some schools have purchased land for their vocational agriculture departments to use. The purchased land may be adjacent to the school property or it may be some distance away. In such a case, considerable travel and many other problems would be encountered in carrying out successful use of the land.

Findings

The findings of the study reveal the operation of school owned land by vocational agriculture departments is feasible. Instructors in 93 per cent of the schools in the study agreed that the operation of demonstration test plots was an asset to the vocational agriculture department. They further stated the operation of school owned land proved valuable in carrying out the total instructional program of vocational agriculture. It gives all boys, farm and non farm, a chance to put into practice skills and techniques learned in the classroom.

The vocational agriculture instructors in the schools studied believed the operation of school owned land should be encouraged. This type of operation gives young men and women a chance to be of service to their community. This was evident in 96.7 per cent of the instructors polled in the study. It gives these students a chance to develop leadership training according to 86 per cent of the instructors of the schools studied.

The findings reveal the objectives of land operation by vocational agriculture departments in Wisconsin to be for *educational purposes only.* In fact, 93 per cent of the schools studied made some use of the land they operated for the purpose of demonstration test plots. The remaining 7 per cent used their land operation for a money making

Identifying the test plot area can easily be accomplished with a road sign. Pictured above is a typical sign designating the test plot area and including the agencies which co-operated with the vocational agriculture department in establishing plots. A public invitation to view the plots can be seen on the sign.

project. Instructors in 86 per cent of the schools studied believed the educational purpose should be limited to demonstrating new varieties and technology, rather than to experiment with something not yet fully developed by research personnel.

The operational procedures employed by the vocational agriculture departments utilizing school owned land revealed a consensus of practices carried out by the schools. Field work is accomplished by the students or custom hired in 89 per cent of the schools in the study. Student field work is performed after school and on Saturdays, with a limited amount of school time involved. Machinery was provided by the students, machinery dealers, or custom hired in two thirds of the schools studied. About one-third of the schools in the study indicated they owned some machinery.

Financing a land operation is a major problem of school operating school farms in other states. All 29 schools in the study indicated the operation of school owned land was self-financed.

The method of land acquisition for vocational agriculture departments use as part of their total instructional program varied with the schools in the study. Sixty-five per cent of the schools acquired the land for use by their vocational agriculture department as part of the total land purchased by the board of education for a building site. Eight schools, or 27 per cent, reported the land was specifically purchased or rented for vocational agriculture use.

Management is the Key —

MANPOWER TRAINING SPELLS SUCCESS FOR ARKANSAS DAIRYMEN

HOWARD W. NEWELL, State Supervisor
Manpower Training in Agriculture

Authorities have recognized for a long time that efficiency in any business venture is possible only through sound management practices. Especially is this true in agricultural pursuits, such as dairying, where so many factors of production are involved.

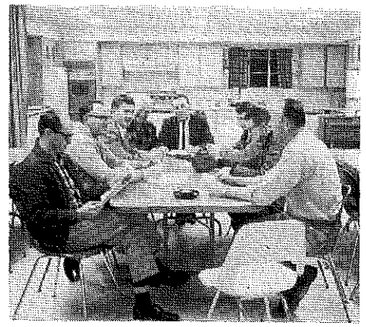
The Setting

A group of agricultural, professional and business leaders of Fulton County, Arkansas, decided to do something for dairy production in their county. The geographical features of this Ozark region is conducive to dairying. The rolling hills and fertile creek valleys provide sufficient resources for pastures and forage crops so necessary to the dairy industry. The entire county is dotted with small farms, a large portion devoted to producing milk for the Manufacturers Market. A large market for whole milk exists in the region, with a cheese plant at Salem, the county seat of Fulton County, another at Batesville, 50 miles to the south, and still other markets at nearby towns in southern Missouri. For several years these plants had been receiving only a small portion of their demand for milk to be processed into dairy products.

There are over 300 small dairymen located in Fulton County. Most of them milk from five to twenty cows, some more and some less. Many of the dairymen range from 30-55 years of age, own or rent their farms and have spent most of their lives on the farm. However, due to rapid technological developments of recent years, many of these dairymen had not changed with the times and were in need of training to upgrade their knowledge and skills, especially was this true in management practices.

The Program

The Fulton County leaders turned to the Manpower Development and Training Act for assistance and after several months were given approval to enroll 20 persons in a 52-week course of instruction. This was the first such project to be conducted in Arkansas under MDTA. The training was tailored to meet the needs of each trainee. It consisted of group, small group and individual instruction, in the classroom,



Shown are supervisor Howard W. Newell and project instructor John C. Thompson (end of table), reviewing progress of training with members of the Fulton County Educational Advisory Committe.

field and shop. The leaders knew the importance of having a well-qualified instructor, with a good technical background and several years experience in dairying. John C. Thompson was such a person. Mr. Thompson, who recently retired after 20 years with the Ralston-Purina Company, St. Louis, Missouri, is a native of Pennsylvania, where he grew up on a dairy farm. He holds B.S. and M.S. degrees in Dairy Production and Nutrition from Pennsylvania State and Ohio State Universities. While with Purina he was manager of Research in Dairy Nutrition and Management. He also supervised their many research and feeding projects across the country. He is an official dairy cattle judge and classifier of Jersey cattle.

The trainees were screened carefully by competent persons in order for them to meet certain criteria, such as: having a potential for increased production, willingness to adopt newer improved farm practices, with adequate physical and mental abilities, to do so.

The Salem High School provided classroom and shop facilities, with a school bus to be used for field trips.

Besides a top instructor and qualified trainees, the third member of the team was the local Education Advisory Committee. This body represented all the agricultural agencies in the county as well as Employment Security Division, industry, utilities, education and farming. This Committee was to advise and

(Continued on next page)

MANPOWER TRAINING

(Continued from page 19)

assist whenever necessary with the instructional program. With such a combination, one has the local, state and federal resources pulling together to solve a common problem.

The instruction was tailored to meet the needs of all trainees. A portion of the training each week was devoted to the entire group whereas instruction of common need was presented. This consisted of such things as keeping adequate farm records, breeding and feeding practices, animal health, milking practices, herd management, improving the farmstead, pasture and forage production, etc. Much of this instruction was given in classroom and field trips. Another important phase of the instruction was that part tailored to fit the individual trainee's need. This is referred to as the "doing" phase of training. That is, the instructor works closely with each trainee and deals with specific problems. Most of the trainees had similar problems, but in various combinations or degree. Upon carefully reviewing each trainees own operation and needs, the instructor advises, encourages, and assists in any way possible toward helping solve the problem. Assistance is provided in such things as milk house construction, building repairs, home improvements, pasture and forage production, culling herds and selection of replacement animals and mixing feeds.

Cooperative projects were encouraged, whereas two or more trainees would meet together on one of their farms and receive instruction of mutual need such as: plumbing, electrical wiring, painting, concrete mixing, building fences, vaccinating cattle, judging, etc.

Laboratory assignments were given trainees to be carried out on their own farms, based on their needs and abilities. Upon completion, practices were checked by the instructor and reported weekly. One activity which proved to be a most effective lab activity was that of testing milk for butterfat production. Such testing was done once a month for nine months. Milk samples were taken of each cow in all herds belonging to trainees. The milk was weighed and butterfat tests were calculated each month, providing trainees with useful and vital information. Since the trainees did their own weighing and testing they soon became conscious of factors that influence production and took remedial steps to eliminate the problems in their own operations. From time to time throughout the course, outside instruction and assistance were provided trainees. Of special significance was the cooperation of the Extension Service, Farmers Home Administration, Soil Conservation Service, Vocational Agriculture and ASCS personnel. Each provided information and assistance as necessary and as often as requested. In addition, various farm and service organization personnel visited the class for any assistance they could render.

The Results

The immediate results of the training was such that everyone concerned with the project termed it highly successful. Overall milk production was up almost 40% for the last nine months of training compared to the same period one year earlier. This was taken from actual records where milk was marketed. And it is felt that the production will go much higher in the months ahead since many factors such as pasture improvement and higher producing animals from artifically bred cows will not reflect real progress for several months or even years after the training project ended.

Likewise the average net worth of trainees was increased remarkably as a result of improved practices carried out on their farms during the year. At the end of training a detailed farm business and financial statement showed the average return on investment for the year to be 7.6% (Average Net Income divided by Average Net Worth).

As a result of this special instruction, trainees are now fully aware of processional services and assistance available as well as how they may participate when necessary. Most of them had availed themselves of the various services before the course was concluded with plans for further participation.

Follow-Up

Before the project ended the Education Advisory Committee formulated follow-up plans to be carried out after trainees completed the course. It was felt that if these dairymen were to continue upgrading themselves they should continue to avail themselves of current information and services offered by these agencies and organizations. All trainees agreed to participate. Follow-up plans were rather extensive and geared to the needs of the individual as well as entire groups. With such participation and cooperative leadership these Fulton County dairymen are well on their way to success.

Since the Fulton County project was such a success several such courses are in progress in other Arkansas counties. A repeat project is also in operation in Fulton County.

At this writing, courses are being proposed for other low-income Arkansas farmers in such things as vegetable production, tomato production, cattle ranchers, and general farming. Sound farm management is the nucleus of all such training.

GUIDELINES FOR ARTICULATION

(Continued from page 17)

9. Previous Training in a Special Instructional Area Should be Recognized

Students who matriculate in technical college programs with previous study at the high school level may well be considered for advanced courses based upon an assessment of their previous training. Their total educational program may not be lessened but they can expect to develop higher level skills and abilities.

10. Regular Meetings of Professional Leaders at Both Levels of Instruction are Necessity for Good Articulation

Understanding and articulation of programs requires dialogue among the leaders of such programs. If leaders do not have mutual respect and understanding, articulation at lower levels is not likely to occur.

11. Teaching Staffs in Specialized Instructional Areas Should Meet Regularly to Share Ideas

Instructors at both levels should have opportunity to met regularly in professional meetings or technical subject-matter groups to discuss common interests and concerns in their specialized instructional area. These sessions might take the form of seminars, workshops, or other in-service meetings.

12. Leadership Development Should be a Part of the Education Program

Education for citizenship and leadership in a democracy should be provided at both levels. Organizations or clubs provide this opportunity in a systematic way. Organizations must reflect the needs and interestes of the age group for which they are designed.

FORMER STATE FFA OFFICERS IN WIDE RANGE OF OCCUPATIONS

RICHARD COBB, Graduate Assistant, New Mexico State University

The follow-up study of former New Mexico State FFA Officers was conducted to determine: (1) the educational attainment level of former officers, (2) their present employment status, (3) their suggestions for the improvement of vocational agriculture in New Mexico, and (4) their remarks in terms of benefits received from State FFA Officer experience.

Findings

Data in Table I indicates present employment status and educational attainment of sixty-one former FFA Officers in New Mexico.

TABLE I

Employment Status and Level of Educational Attainment

Present position	Number of responses
HIGH SCHOOL ONLY (23)	
Production agriculture (farming & ranching)	13
Banker	1
Rural Appraiser	1
Cotton gin owner	1
Fertilizer salesman	1
Machinist	1
Gas company manager	1
Auto body shop worker	1
Steamfitter	1
Lumber & hardware supply	1
Insurance agent	1
B. S. DEGREE (27)	
Production Agriculture	3
Vo-Ag teacher	2
Minister	2
Extension Service	2
Forest Service	2
Military (career)	2
Farmer's Home Admin.	2
Federal Land Bank	2
Teacher—history	1
Teacher—foreign lang.	1
Farmer's market manager	1
Brand inspector	1
Engineer	1
Veterinarian	1
Real Estate salesman	1
Certified Public Accountant	1
Sears, (credit manager)	1
Fireman	1
MASTER'S DEGREE (10)	
High School guidance counselor	2
University teacher—accounting	1
University placement director	1
High School teacher	1
Vo-Ag teacher	1
Extension Service	1
Engineer	1
Insurance agent	1
Livestock Bureau fieldman	1
DOCTORATE (3)	
Voc. Ed. Specialist	1
Chemist	1
Mathematics	1

Fifty-two per cent of those former officers terminating formal education at the high school level are presently engaged in production agriculture. Fourteen per cent are in agriculturally related occupations, and the remaining thirty-four per cent are not associated with agriculture.

Of former officers with bachelor's degrees, eleven per cent are in production agriculture; thirty-seven per cent are in agriculturally related enterprises; and, fifty-two per cent are not working in agriculture.

No former officers holding Master's degrees are in production agriculture. Thirty per cent are in agriculturally related fields. Seventy per cent are not affiliated with the agricultural industry.

All respondents with a doctorate degree level of education are employed in non-related agricultural occupations.

Summary of Data

Data from all former officers replying in the study indicated that twenty-two per cent of the respondents are presently engaged in production agriculture; and, twenty-four per cent are working in related agricultural fields. Whereas, fifty-four per cent of the former FFA Officers in New Mexico are not associated with the agricultural industry.

Fifteen former officers are currently enrolled as college students and their responses are not reported in Table I.

Improving Vo Ag

Table II presents suggestions of the former officers as to improving vocational agriculture in New Mexico.

TABLE III

Benefits of State FFA Officer Experience

Benefits received	Number of responses
Establishing personal and business contacts and meeting people	34
Public speaking abilities	24
Leadership development	24
Self-confidence	11
Developing responsibility	7
Management skills	7
Opportunity to travel	2
Knowledge of New Mexico agriculture	2
Personal satisfaction	1
Lead to a National Officer	1

Richard Cobb

TABLE II

Suggestions for the Improvement of Vocational Agriculture

Suggestion	Number of responses
Broaden program to include related agricultural occupations	16
agricultural occupations	16
Improve community relations	4
More emphasis on public speaking	4
More emphasis on FFA leadership activities	3
Offer more travel opportunities for students	3
Improve student selection for Agriculture classes	2
Offer Vo-Ag in more schools	2
Better prepared Vo-Ag teachers	2
Cut down on Vo-Ag teacher load	2
Eliminate double period	1
More emphasis on mechanics	1
Provide Audio-Visual service for Vo-Ag teachers	1
More research in Non-farm occupations	1
Less emphasis on degrees	1

Benefits in Being State Officer

Data in Table III indicates opinions of respondents in terms of benefits received from experiences as a State FFA Officer.

Conclusions

Conclusions were drawn in light of the findings of the present study.

1. Trends in vocational agriculture educaton are moving towards the preparation of students for liberal, leadership-type activities rather than occupational employment in production agriculture upon completion of high school.

2. A renovation in curriculum is foreseen with new emphasis on related agricultural occupations as employment media for high school graduates.

MECHANICAL SKILLS NEEDED FOR OFF-FARM AGRICULTURAL OCCUPATIONS

by

GENE A. GENTRY[1]

Can a teacher of agriculture in a one-man department prepare students for both production agriculture and off-farm agricultural occupations? Several studies have been conducted that relate to this. This report deals with the agricultural mechanics aspect of the curriculum.

In the spring of 1964, Tugend determined to what extent successful farmers in Maryland used each of 100 farm mechanics skills or competencies (see footnote of table.) These appear in the accompanying table in rank order.

The next question posed was: To what extent are the mechanical skills and competencies needed by workers in off-farm agricultural occupations the same as those needed by farmers? To answer this question, at least in part, two groups of businesses were studied: the farm machinery sales and service business, and farm supplies and equipment business. A random sample of 25 in each group, located in five central Maryland counties, was chosen and the employers in each interviewed. They were asked how important they considered each skill in Tugend's study for workers in their businesses. In addition to the 100 skills used in Tugend's study, 19 additional skills were included which, according to a panel of experts in agricultural mechanics, were considered to be of value for workers in those businesses.

The accompanying table shows the 19 additional skills at the bottom of the 100 used in Tugend's study. Those skills which are noted by the letter "a" fall into the top quartile (approximately) in terms of value or need for the employee noted, based on rankings by employers interviewed; those that are marked with a "b" fall in the next quartile.

[1]Formerly graduate assistant, University of Maryland, and subsequently teacher of agriculture, Palouse, Washington.

[2]Gene A. Gentry, "Mechanical Competencies Needed for Employment in Farm Machinery Sales and Service and Farm Supplies and Equipment Businesses," Department of Agricultural and Extension Education, University of Maryland, College Park, Maryland 20740, pp. 11.

Space is not adequate to report all of the findings nor to analyze the data in detail. A complete listing of rankings of skills for each group of employees would be too tedious. Anyone interested in knowing the specific rankings of skills may secure a copy of a more complete report by writing for it.[2]

Although the data in the accompanying table are divided into the two top quartiles, in the following discussion it is considered together, as the top half.

(Continued on opposite page)

AGRICULTURAL MACHINERY SKILLS AND COMPETENCIES NEEDED BY SALES AND SKILLED WORKERS IN FARM MACHINERY SALES AND SERVICE OCCUPATIONS AND IN FARM SUPPLIES AND EQUIPMENT BUSINESSES IN FIVE MARYLAND COUNTIES, 1965, AS COMPARED WITH RANK OF NEED BY SUCCESSFUL FARMERS IN MARYLAND, 1963

Skill or competency, ranked according to need by successful farmers*	Employees need, according to: Farm machinery sales and service employers** Sales	Skilled	Farm supplies and equipment business employers** Sales	Skilled
1. Fit handles in hand tools	–	–	b	a
2. Repair a damaged appliance cord	b	–	a	a
3. Cut metal using a hacksaw	–	b	–	b
4. Replace and putty a window pane	b	–	a	a
5. Operate a power circular hand saw	b	–	a	a
6. Service the air cleaner	a	a	–	a
7. Use a portable drill for drilling holes in steel	a	b	b	a
8. Hang farm gates	–	–	–	–
9. Repair a field mower knife	b	b	–	–
10. Adjust tractor brakes	a	a	–	b
11. Operate a power grinder	–	b	b	a
12. Lubricate front wheel bearings	a	a	a	a
13. Order parts by use of manual code number	a	b	a	b
14. Hitch plows for vertical and horizontal correctness	a	a	b	–
15. Repair metal roofing	–	–	b	b
16. Thread galvanized iron pipe	–	–	a	b
17. Apply paint after using a primer	b	–	a	a
18. Adjust carburetor on a small internal combustion engine	a	a	–	–
19. Make a connection to a lighting fixture	b	–	b	b
20. Hook up an electrical fence	–	–	–	–
21. Construct a piece of equipment according to own design	–	–	–	–
22. Clean and regap spark plugs	a	a	–	b
23. Splice woven fire fence	–	–	–	–
24. Finish or trowel concrete	–	–	–	–
25. Build concrete forms	–	–	b	b
26. Adjust the carburetor of tractor	a	a	–	b
27. Repair tires on farm machinery	b	b	a	b
28. Make a common electrical splice	b	–	a	a
29. Register the knife of a field mower	a	a	b	–
30. Make an estimated bill of materials for small construction	–	–	a	–
31. Adjust clutch pedal clearance	a	a	–	b
32. Replace bearings	b	a	–	b
33. Sharpen a wood twist bit	–	b	b	b
34. Cut threads on steel rod	b	b	b	b
35. Estimate the quantity of concrete needed for a job	–	–	–	–
36. Use wood preservatives on outdoor buildings	b	–	a	a
37. Measure and cut plastic pipe	–	–	–	–
38. Clean oil pump screen	b	a	–	–
39. Lay out foundation lines	–	–	–	–
40. Replace distributor points	a	a	–	b
41. Mix concrete	–	–	–	–
42. Calibrate a field sprayer	a	b	a	–
43. Sharpen forage harvester cutter knives	–	b	–	–
44. Wire a two way switch	–	–	–	–
45. Lay masonry blocks or bricks	–	–	–	–
46. Tin a soldering iron	–	b	–	b
47. Cut glass to a desired shape	–	–	a	a
48. Select grinder wheels for the job	–	b	b	b
49. Repair building foundations	–	–	–	–
50. Select equipment according to the U. L. approved label	a	–	b	–
51. Make a short rope splice	–	–	–	–
52. Replace engine head gasket	b	a	–	–
53. Install insulating materials	–	–	b	–
54. Draw a map of the farm and plan a suitable cropping system	b	–	a	–
55. Reverse the direction of turn in an electrical motor	–	–	b	–
56. Design and maintain an efficient tool storage system	b	b	–	–
57. Water-proof concrete or block walls	–	–	b	–
58. Sweat a patch with solder	–	b	–	b
59. Adjust the combine for proper running speed	a	a	b	–
60. Clean and set a hand saw	–	–	–	b
61. Flush the cooling system with a commercial radiator cleaner	a	a	–	b
62. Wear protective glasses while grinding	a	b	a	a
63. Adjust engine valve tappets	–	a	–	b
64. Select an electrical motor according to working conditions	a	–	b	b
65. Change a motor from 110 to 220 volts by changing the wiring hookup	–	–	b	b
66. Rivet sheet metal	–	–	b	b
67. Calibrate a grain drill	a	b	a	–
68. Prepare metals for electrical arc welding	–	b	–	a
69. Adjust engine ignition timing	b	a	–	–
70. Establish a farm shop	–	–	–	–
71. Dress grinder wheels	–	–	–	b
72. Select the proper rods for electrical arc welding	–	a	–	a
73. Cut a piece of metal with the arc welder	–	–	–	a
74. Determine purpose and select wire sizes according to code	b	–	b	b
75. Make a lap, butt or corner weld on iron or steel	–	–	–	a
76. Measure fields to determine acreage	b	–	a	–
77. Adjust tractor governor	b	a	–	–
78. Clean and service a used electrical motor	–	–	b	b
79. Paint machinery with a power sprayer	b	–	–	–
80. Measure combine harvesting losses	a	a	b	–
81. Construct a portable building according to a blueprint	–	–	b	b
82. Construct a simple terrace	b	–	–	–
83. Install a bulk fertilizer handling system	–	–	a	–
84. Correct defects in a drainage system	–	–	b	–
85. Use a carbon arc torch for welding	–	–	–	a
86. Estimate the cost of an irrigation system	b	–	–	–
87. Plan a building fire control program	–	–	–	–
88. Construct an outlet for field tile	–	–	–	–
89. Service the diesel-fuel-injection filters	a	a	–	–
90. Operate an oxyacetylene cutting torch	–	a	–	a
91. Hard surface with oxyacetylene welder using proper rod	–	–	–	–
92. Correct defects in an irrigation system	b	–	b	–
93. Use wood glue for outside construction	–	–	b	–
94. Braze cast irons with the oxyacetylene welder	–	–	–	a
95. Install overload protective devices	–	–	a	b
96. Construct a farm pond	b	–	–	–
97. Install a feed or grain auger system	b	–	a	a
98. Estimate the cost of a drainage system	–	–	–	–
99. Determine proper size of field tile	–	–	b	–
100. Plan a farm wiring system	–	–	–	–
101. Care of machinery	a	a	a	a
102. Care of tools	a	a	a	a
103. Service fuel injection system	a	–	–	–
104. Overhaul a small engine	–	a	–	–
105. Trouble shoot	a	a	b	a
106. Service transmission and final drive	–	a	–	–
107. Basic hydraulics	a	a	b	–
108. Adjust baler for proper operation	a	a	b	–
109. Assemble machinery	a	b	b	–
110. Shape and bend hot metal	–	b	–	–
111. Temper a chisel	–	–	–	–
112. Anneal metal	–	–	–	–
113. Lathe operation	–	–	–	–
114. Build up worn parts	–	b	–	b
115. Weld pipe	–	b	–	a
116. Weld with a heli-arc welder	–	b	–	b
117. Assemble pipe	–	–	a	b
118. Operate hammer mill and mix feeds	a	–	a	a
119. Install and operate dairy equipment	b	–	a	–

*David M. Tugend, "Comparative Study of Selected Farm Mechanical Skills Performed by Successful Maryland Farm Operators and Farm Mechanical Skills Taught in Vocational Agriculture in Certain Maryland High Schools" (unpublished Master's thesis, University of Maryland, College Park, 1964), pp. 67-71.

**An "a" means that the skill was ranked in the top one-fourth (approximately), and a "b" means that it was ranked in the second one-fourth (approximately), based on employers' assessments of employee need.

Farm Machinery Sales and Service Business

If a teacher is preparing in a single class students who plan to enter farming and some who are preparing for farm machinery sales and service work, how many mechanical skills or competencies can he teach that will fit both groups? If one looks at the top 50 skills or competencies needed in agricultural mechanics by those preparing for farming, he will find 27 of those skills among the top half of skills needed by sales people and 24 in the top half of those needed by skilled workers in the farm machinery sales and service business. Of these, 19 skills are applicable to all three groups.

Farm Supplies and Equipment Business

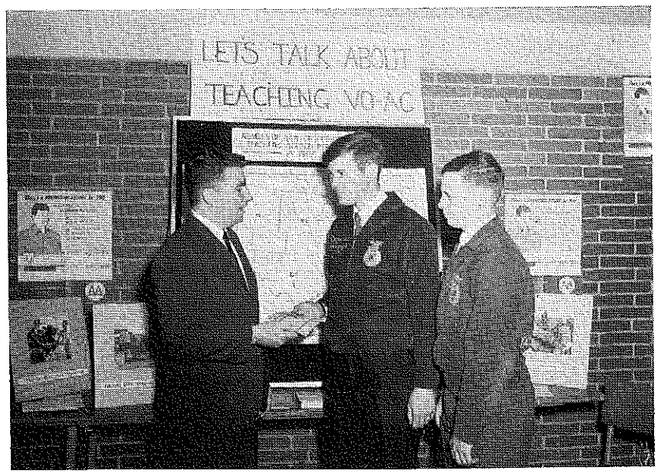
If a teacher is interested in preparing students for jobs in the farm supplies and equipment business, he will find that the top 50 skills needed by farmers, 26 of the skills are among the top half needed by sales people and 29 among the top half for skilled workers. And, 17 of the skills needed by farmers are needed by both sales and skilled workers in the farm supplies and equipment business.

Salesmen and Skilled Workers

If one considers the matter in terms of function rather than business, i.e., salesmen for both businesses and skilled workers for both, he finds that of the top 50 skills needed by farmers, 18 are needed by salesmen preparing for both types of businesses. And, skilled workers in both businesses need 17 of the same top 50 skills needed by farmers.

Conclusion

As expected, not all of the skills needed by salesmen and skilled workers in the farm machinery sales and service business and farm supplies and equipment business are the same as those needed in farming. However, it is apparent that there is a substantial number of skills that farmers needed that are also needed by workers in these businesses. By careful planning, the teacher can teach in a single class many of the mechanical skills needed by students preparing for farming and these two off-farm agricultural occupations businesses. The amount of class splitting in order to teach different skills can be minimized.



One of the features of the 1967 Ohio FFA Convention was this recruitment exhibit. Dwane Sayre, left, teacher of vocational agriculture at Sycamore, Ohio, and a member of the Ohio Recruitment Commission for Agricultural Education, discusses careers in teaching with two Future Farmers. Recruitment of good teachers of vocational agriculture has always been a problem and it appears to continue with us in the next 50 years.

Stories in Pictures

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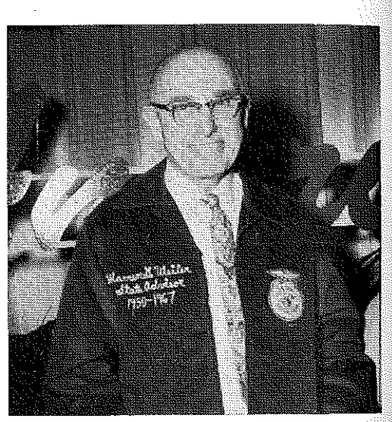
OHIO STATE UNIVERSITY



Warren Weiler, retired state supervisor of Vocational Agriculture was presented his first FFA jacket at the 1967 Ohio FFA Convention.

The farmer during the next 50 years will need to have a greater knowledge of agricultural mechanics and technology than before. Bobby Anderson, Teacher of vocational agriculture at Racine, Ohio, had 61 farmers enrolled in an agricultural mechanics welding class.

AGRICULTURAL EDUCATION

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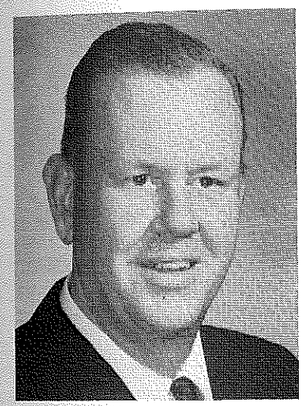

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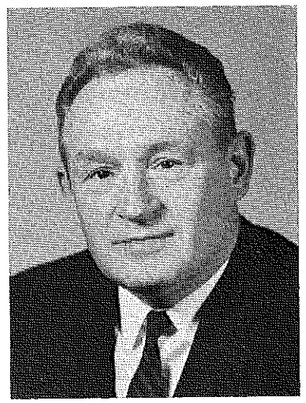

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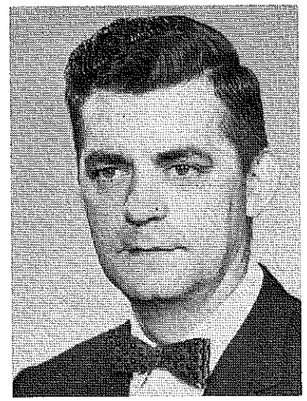

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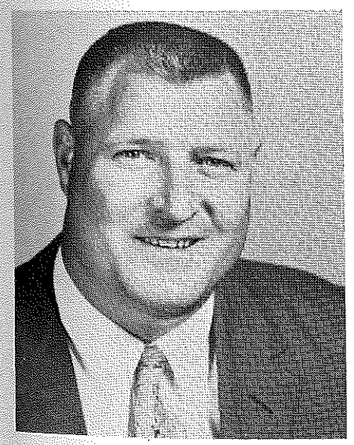

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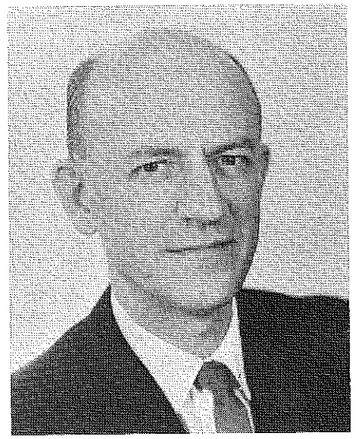

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