

# The AGRICULTURAL EDUCATION Magazine

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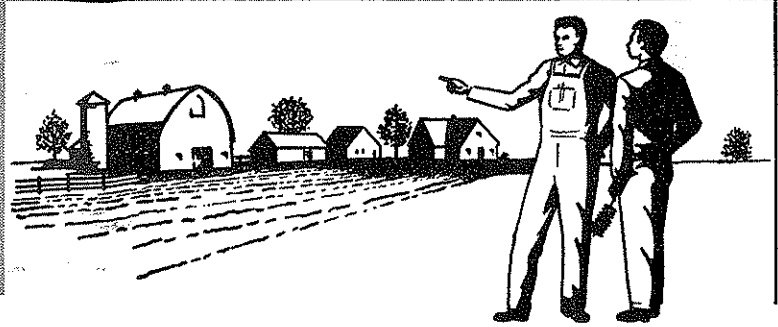
NUMBER 11



Picture legend, page 244

*Featuring*—Planning for the Summer  
also—Additional Articles on  
Farm Mechanics

# The Agricultural Education Magazine



A monthly magazine for teachers of agriculture. Managed by an editorial board chosen by the Agricultural Section of the American Vocational Association and published at cost by Interstate Printers and Publishers, Danville, Illinois.

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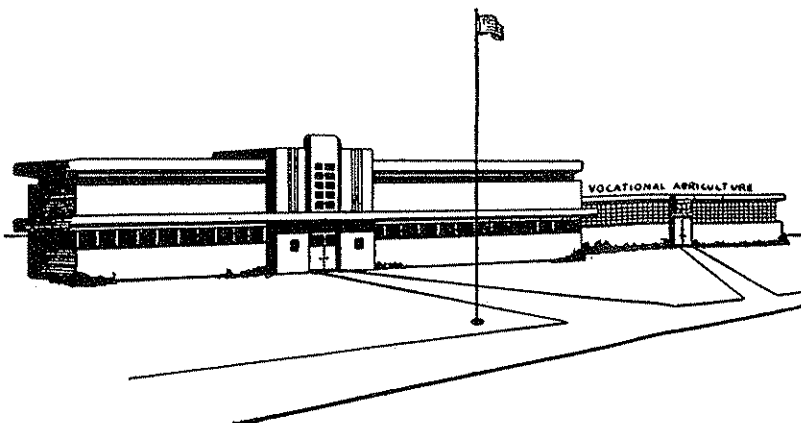
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# Editorials

## Guest Editorial

### Is It Time to Change the Name of the FFA?

C. C. SCARBOROUGH, Teacher Education, North Carolina State College, Raleigh

A reporter for the local daily newspaper was interviewing boys at one of the state FFA conventions last year. In his front-page story following the interviews he asked, "Why are you called 'Future Farmers' when so few of you plan to become farmers?" It was a good question, and one we should have asked ourselves long before the reporter asked us. Incidentally, the boys interviewed did a good job of answering his question, explaining that they "learned a lot more than farming" in the FFA.

I suggest that *we should change the name from Future Farmers of America to Future Leaders in Agriculture—from FFA to FLA*. It would be more appropriate and would include the many areas of agriculture as well as farming. The new name would not detract from those boys who planned to farm. Furthermore, the proposed new name would give appropriate recognition to the greatest contribution that the organization has made to the thousands of young men who have gained so much from belonging, that is, the area of *leadership*.

There are a number of very practical reasons for considering changing the organization for boys studying agriculture. That is, some forms of agriculture are growing and offering many opportunities for boys to find their life work, while farming is becoming more restrictive in its possibilities. A recent major study in the South concludes: "The grim prospects of rural youth living on the farm are unparalleled in our history. Only one-tenth of rural (Southern) youth can look forward to operating a farm for a decent living."

This proposed change in the name of the organization would be followed by the addition of degrees in leadership along with the degrees for the future farmer. The present degrees would be continued. In addition, we would have the Green Hand Leader, the Chapter Leader, the State Leader, and the American Leader in Agriculture degrees. Each of these degrees would have specified qualifications for advancement to the next highest degree. This would encourage more boys to develop their leadership potential. It would also give recognition to those hard-working boys in the organization who never have the opportunity to advance to the higher farmer

(Continued on page 244)

## From the Editor's Desk

### The Birth of an Editorial

Several people agreed with my editorial in the February, 1962, issue of *The Agricultural Education Magazine*. Many of them wrote letters in response to it; others said so by telephone. One of the letters was from Dr. Cayce Scarborough, of North Carolina, who stated that he was in the midst of writing an article suggesting a name change for the FFA. His description of the article prompted me to write him by return mail asking him to complete the article within one week, if possible, and in editorial form rather than the usual article. He did this and it is printed in the opposite column on this page. That is how some editorials get into print.

Whether you agree with what Dr. Scarborough is proposing or not, I wanted to present this kind of thinking while I am still editor. One more issue is all that is left for me, and then Dr. Ralph Woodin of Ohio State University takes over as editor.

One or two of the responses I have had as editor have stated that we should not disturb the *status quo*, that if we tamper with the structure of the legislation concerning agricultural education, we might lose all of our support. My feeling is that if we are no stronger than that, we ought to lose support. However, I feel that agricultural education has never been stronger. Even with its strength, it needs constant revision to meet the changes in agricultural technology, not complacency and floundering. If we stop now and rest on our laurels, they will soon wither. Adjustments are absolutely necessary in all walks of life, including religion (the least changeable); when adjustments are not made, death occurs. Our program is not invulnerable; we must keep abreast of the times or wither away.

One person suggested that I was using the *Magazine* as a "pop-off" valve. As editor, I realize that I have an obligation to maintain the good will built up through the years for the field of agricultural education. The way I interpret that obligation is to point up suggestions for bettering our profession and to seek articles, and include others not sought, which suggest new directions, articles which dare to challenge the *status quo*. I have been as selective as copy would permit; I have written to various people to urge them to express their ideas, regardless of the consequences. Only by thinking beyond what is now known about agricultural education can we hope to grow. I regard this as my obligation to the *Magazine*.

Included in this issue is another article, the one by

(Continued on page 244)



### Change Name of FFA . . .

degrees because of limited circumstances at home.

It would appear that the new degrees in leadership would be especially appropriate in qualifying for an officer in the organization. Anyone familiar with the operation of the FFA at the chapter, state or national level has experienced the frustrating problem of having excellent candidates who would likely make very fine officers, but their farming programs were not large enough in scope to qualify them for the advanced degree necessary to qualify for the office. It is said that some "maneuvering" has been necessary so that the top leader might qualify for the position. We do know that there has been criticism from some of the leaders at agricultural colleges in this regard.

The change in name suggested here could be made very readily with little change in the structure of the organization. The addition of the de-

grees in leadership and the name itself would be the major changes. In fact, some parts of the present organization would fit the new name better than the old. For example, try it in the opening ceremony.

"Future Leaders in Agriculture, why are we here?"

"To practice brotherhood, honor rural opportunities and responsibilities, and develop those qualities of leadership which a Future Leader in Agriculture should possess."

Would you be willing to have this proposed at state and national FFA meetings? My guess is that the boys would like the idea, get behind it and make the few changes needed to change from FFA to FLA. At least, you wouldn't mind the boys considering the question, would you? If they thought that this was a "crazy idea," I am sure that they would say so and dispose of it accordingly. □

### The Birth of an Editorial

Dr. Harold Steele, which treats agricultural education a bit differently. He sees agriculture as a continuous process from farmer to consumer; his article should add still more food for thought in planning a broader and broader scope for agricultural education. □

### The Cover Picture

The 1961-62 National FFA Officers. Seated, left to right: Victor Butler, Havana, Florida, President; Richard C. Black, Student Secretary; standing, left to right: (All National Vice Presidents) Darryl Eastvold, Mayville, North Dakota (Central Region); Keith N. Simmons, Enterprise, Oregon (Pacific Region); J. Randall McCutcheon, Reedy, West Virginia (North Atlantic Region), (Randall is a member of the Spencer, W. Va., FFA Chapter); and James Prewitt, Kirbyville, Texas (Southern Region). Picture submitted by H. N. Hunsicker.

## Farm Demonstration Plots A Useful Teaching Aid

LELAND E. ASHBY, JR., Vo-Ag Instructor, Gillespie, Illinois

The summer of 1961 was for me the most efficient and enjoyable summer, ever, in conducting the vocational agriculture summer program. I was made aware of the great value of demonstration plots as teaching aids when such plots are established by the vocational agriculture students and adult farmers on their farms. In every community it seems that there are the innovators and early adopters that hasten to put into use the new techniques and practices that are being developed. However, among a great many farmers, there seems to prevail a "wait and see" attitude. This often results in a time lag between the first awareness of a new practice and the adoption of such a practice on a farm.

Last winter one of our adult farmer evening courses was on crop production with a majority of the meetings being devoted to the corn crop. We tried to find out all that we could about the improved techniques for raising corn. Personal experiences were shared by the class members;

research data were presented; and resource personnel were used to clarify certain areas. By the time of the last winter meeting we had developed a rather impressive list of approved practices for raising corn. However, many of the practices were not being used by members of the class. It was at this last winter meeting that we decided to have a look at the practices on small demonstration plots established on each farm. We planned to have a twilight follow-up meeting later in the summer to tour the plots.

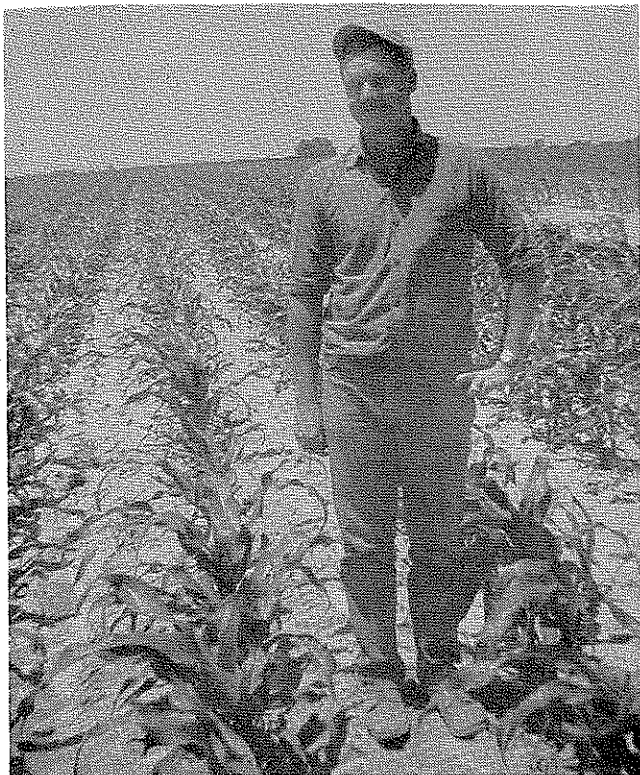
The summer meeting and tour was held on July 18, 1961. In the letter mailed to the class members, the following itinerary for the tour was included:

5:30 p.m. Ernest Boedecker—Atrazine plots and high fertility corn.  
5:45 p.m. Maynard Boedecker—Atrazine plots and minimum tillage corn (plow & plant).  
6:00 p.m. Dale Boedecker—Atrazine plots and minimum tillage corn.  
6:30 p.m. Walter Hammann—2, 4-D, test soil and fertilize corn for 97%

—98% yield.

6:50 p.m. Russell Hammann—2, 4-D and atrazine plots.  
7:10 p.m. George Sholtis—Sodium arsenite plot and high fertility corn plot.  
7:35 p.m. Charles Ruyle—Plow and plant corn plots with soil insect implications.  
7:55 p.m. Everett DeSart—Plow down fertilizer.  
8:15 p.m. Ralph Balldridge—Aldrin, 2, 4-D, high fertility, high population corn, terraces.

This summer meeting and tour was undoubtedly the most successful meeting of the course. Many of the farmers present expressed the intent of at least trying on a small scale some of these practices that impressed them favorably. In most instances we were very well pleased with the results observed at each plot. If the results observed did not appear favorable, we were able to find a logical reason and thereby contribute to the learning experience. For an example, at one of the "plow and" corn plots, it was



Dale Boedecker standing in his three acre "plow and plant" corn demonstration plot. This corn had no cultivation; 2, 4-D kept weeds down. A corn yield check made on Nov. 15, 1961, showed the yield to be 96.7 bushels per acre.

apparent that the plant population was lower than desirable. The farmer who established this plot had already reasoned out the cause for the low plant population. He had plowed when the field was a bit wet, and when he planted several days later the soil had become too dry for all of the corn to germinate. At this plot we re-emphasized three important rules to be followed when "plow and plant" tillage is used. They were (1) plow when the soil is ready, (2) plant soon after plowing—preferable the same day, and (3) devise some way for compacting the soil in the planting row—planting in the trac-

tor wheel tracks been established near a timbered area in highly trashy soil, the plant population was only about one-half that of the population in the conventionally prepared seedbed adjacent to it. The reason here was obvious. Millions of corn field ants and their symbiotic partners, the corn root aphids, had established their little mound-shaped entrances to their homes in the loose soil. There were practically none of these ant hills in the conventionally prepared seedbed. This was convincing proof of the need for a soil insecticide under these conditions.

Generally speaking, I did not have difficulty in finding cooperators for



Vocational agriculture student, Wayne Boedecker, (left) and his instructor, Lee Ashby, banding atrazine on newly planted corn.

establisg the plots. Altogether we seemed the most practical way of doing this.

At another "plow and plant" plot that had

had eleven plots in the community on adult farmers and vo-ag students' home farms. This summer, more of the vo-ag students would like to participate.

The school board was helpful in supplying funds for the purchase of a backpack sprayer and some of the chemicals used. We used the sprayer for banding on pre-emergent herbicides. Farmers that had a giant fox-tail weed problem were particularly interested in these plots.

Farm visits during the summer to these cooperator's farms were a genuine pleasure for me. After a few minutes discussing the weather, etc., the cooperator would want to show the demonstration plot and to discuss progress made. I am convinced that crop demonstration plots are a valuable tool that can be used in teaching agricultural practices. □

## Summer Camping Trips

CLIFFORD VAN BERKUM, Vo-Ag Instructor, Swea City, Iowa



Summer camping trips can be used effectively as a teaching aid. Briefly, they can also be used for the following purposes:

- (1) Visiting new farming areas often talked about to compare farming areas.
- (2) Visiting unique farming methods such as weed burning, etc.
- (3) Visiting areas looking for new breeding stock or research areas.
- (4) Visiting educational areas in the area of sight seeing.
- (5) Visiting areas to promote love of nature and camping.

There are many items to investigate when a group intends to take a camping trip. Often if the group can do their visiting before the tourist season, motels with cooking privileges

can be obtained for half the normal rates. The cheapest way, however, is by camping out by tents. Much valuable information can be obtained from the AAA, area Chamber of Commerce, Department of Interior and Department of Wildlife.

The two things that take the most room if carried are clothing and food. In most cases it is better to take an excess of food along to satisfy the ravenous appetites of the teen-agers. Packing just the bare necessities of clothing in a duffle bag saves room and packs the easiest.

The trip should be planned well in advance with plenty of rest, fueling, and "unloading" stops along the way. A mistake all too commonly made is to cover too many miles in a day and often missing things worthy of note.

Plan your food for each meal for each day. Maybe the Home Economics teacher will help to see that it is balanced, but take the food along that will please the majority. Also plan who is going to do the cooking for each meal and the cleanup and detail lists so there is no doubt who is going to do what. Tape the list to one of the tent poles for observation.

It is often helpful to have the parents sign a slip giving permission for the son to go on the trip. This slip should contain a brief itinerary of the trip, what equipment and money is required for the trip and some behavior requirements such as smoking, language, and girls. The last doesn't ever get enforced too heavily, but respectful behavior in this area is expected. A threat that works quite well to squelch any misconduct is to also include on the slip that any boy that becomes too much of a burden will be shipped home at the parent's expense from the nearest bus depot. It must be a good enough scare because this alternative has never been used. We also encourage the boys to wear their FFA jackets. This encourages good behavior on their part and, besides advertising the group, promotes many favorable comments from other people.

Upon returning home from the trip, a complete review with the group should be made noting areas not worthy of investigation and those that are. This is especially important if you plan on returning to the same area at a future date. A similar note on equipment, food, clothes, etc., should be made to know which things can be deleted and those that should

be added. List also the total cost, number of participants and the cost per person. You may also want to include the money spent by the individuals for personal wants and needs to help the boy plan for next year's trip.

You may want to use various methods on deciding who can go camping. A point system works well. Taking junior and senior boys has worked best since freshmen and sophomores tend to be a bit immature at times and tend to be the discipline problems.

Here is an example of a fishing trip recently taken by our chapter as to the equipment required for seventeen people:

#### Personal gear

1. Sleeping bag with air mattress
2. Insulated underwear or long johns
3. Two pairs of blue jeans
4. Toilet articles (soap, tooth brush, towel and wash cloth)
5. Raincoat or parka
6. Dish towel and cloth
7. Eating utensils (paper plates can be used)
8. Flashlights and matches
9. Fishing gear
10. Life jacket or pillow
11. Camera

#### Additional gear

1. Seven fish boxes
2. Five motors
3. Three skillets
4. Two large pans
5. Two pancake turners
6. Two sharp fillet knives
7. One large spoon and fork
8. Two can openers
9. Five gas cans
10. First aid kit
11. One shovel (army type)
12. Five landing nets
13. Five minnow buckets
14. One hand axe
15. Two camp stoves

#### List of food

1. Six boxes pancake mix
2. Ten dozen eggs
3. Ten cartons cereal (variety packs)
4. One gallon corn
5. One gallon peas
6. One gallon beans
7. Thirty packs kool-aid
8. Two gallons peaches
9. One gallon apple sauce
10. One gallon apricots
11. One gallon plums
12. One gallon cherries
13. Six packs dried soup
14. Six cans of chili
15. Six cans chow mein

16. Six cans stew
17. Six cans instant tea and coffee
18. Five boxes powdered milk
19. Twenty pounds of sugar
20. Two boxes salt and pepper
21. Twenty-five pounds of flour
22. One hundred pounds of potatoes
23. Six large boxes of potato chips
24. Two and one half gallons syrup
25. One bottle liquid soap
26. Four rolls toilet paper
27. One gallon shortening
28. Five pounds butter
29. Twelve cans grapefruit sections
30. Four rolls aluminum foil
31. One box scouring pads
32. One gallon peanut butter
33. One gallon jelly
34. One can cocoa
35. Ten pounds corn meal
36. Ten pounds cheese
37. Repellent
38. Fizzies and Tang
39. Eighteen loaves of bread (this was bought in Canada. All the other food could have been bought here also, but we get a discount at the grocer's)

This trip can be educational and fun if planned properly. We always take slides of the trip and invite the parents to an FFA meeting. We finish off the night with a watermelon feed, jam session and pictures. This gives the parents an idea what went on. As a result the parents often go to the same area and use the information compiled. We don't have any problem getting drivers or chaperones for our next year's trip either. It gets to the point where one can complete a standing list of drivers for the next year.

We also have made it a practice to give two awards for this trip. The group votes as to whom shall receive these honors. The first award goes to the one that did the most to make the trip a success and the second is a "stinkers" award to the one that did just the opposite. There is keen competition for the first award and often we don't even have to award the second. □

He who never made a mistake never made a discovery.

—Ag. Ed. Magazine, Feb. 1944

Do I have no better reason to be born than to consume the corn, the fish, and leave behind an empty dish?

—Henry Van Dyke

# Farm Science and Intermediate Steps

HAROLD C. STEELE, Professor of Biology, The Woman's College of Georgia, Milledgeville

The purpose of this paper is to emphasize the role of science in transforming raw farm products into finished items gracing the person, table, home, or office of the city dweller. Special attention will be given to means by which agricultural educators may illustrate more effectively how science converts original farm substances into useful products for urban utilization. Most importantly, evidence will be presented to verify the urbanite's dependence upon the toil of the farmer.

Few would fail to recognize the vast differences between life modes of the modern rural farm and the urban city. In the urban area one finds planning boards, a municipal auditorium, competitive selling, and bidding for industrial organizations. There are also congested streets, rapid transit systems, time-punch cards, anonymity, smoke, and wages. In contrast, the farm offers the slower pace of the smaller town, the quiet routine of sundown chores, barnyards, planting, hoping, and harvesting. There is fodder in the shock as people ride into town on Saturday. A Sunday brings an old-time meeting with dinner on the ground.

A superficial examination of the urban and the rural reveals that city life is apparently much more active and progressive, more in keeping with today's rapid technological pace. While the urban dweller rushes along, the farm resident seems to move in old traditional ways. Closer study shows, however, that science and the manifold advantages of its applications, are making their impact upon farm life in quite as great a measure as upon that of the city. Numerous illustrations to support this view are found in the literature. For example, a recently developed peanut harvester digs the peanuts, cleans them, bags them, and sells them for one-fifth the cost of present harvesters. X-ray, radioactive cobalt, and the betatron are being used to produce malting barleys with stiff straw as well as types of rust-resistant wheat. A new concept in ground drive parallel bar rake design eliminates the need for a gear box, universal joints, or chains. One farmer has used the bacterial decomposition products of

cow manure to produce enough methane gas to run four tractors, heat his home, and do his cooking. A young college agriculture student emphasizes the role of farm science when he predicts that tomorrow's farmers, some with doctor's degrees, will operate their farms by remote control from home offices. Feeders, gates, and doors will be automatic. Helicopters will help to check and supervise farm activities. Another student predicts that cloud seeding or some similar operation will be used to induce rain. Where irrigation is used, an underground pipe system will distribute fertilizer as well as water. Still another student anticipates that biological scientists may learn to duplicate life processes such as photosynthesis. This achievement might start an agricultural revolution of sufficient importance to overshadow mechanization. Such evidence as this provokes a respect for modern farming as a scientifically progressive undertaking.

One might build a logical argument that present city accomplishments rest fundamentally upon the stability, productivity, and the successful application of science principles on the farm. The city is dependent upon farm soil in the same sense that various organisms of a classical biological food pyramid are dependent upon the soil. All organisms near the apex of such a pyramid are ultimately rooted to the soil through their dependence upon the organisms found nearer the soil at the base of the pyramid. Similarly, the food of the farm soil is harvested, processed, and made available to the city at the apex through the work of the farmer who tills the soil at the pyramidal base. This pyramidal relationship helps to show that the soil is the basis of both farm life and city life, and the farmer himself is closer to the soil foundations of that relationship. Since this is such a fundamental relationship, it would seem that there would be a closer communication between the farmer and the urbanite, an increasing understanding, acceptance, and appreciation of the rural producer by the urban consumer. But such is not the case.

One of the primary reasons for this continuing lack of appreciation of

the farm role is that too often educators fail to stress with intermediate steps the variety of scientific processes that convert raw materials from the soil into finished products for consumption by city dwellers. The urbanite accepts the product for granted, oftentimes, with little thought of the scientific processes that make the item possible. By "intermediate steps" is meant those specific provisions made by classroom teachers in logical daily lesson planning that emphasize the step-by-step development of a raw material such as a cotton seed to the finished shirt that is worn by the city dweller. Educators have too freely stressed the original seed or the finished shirt with little attention to the many processes that tie the two together into a meaningful story of scientific achievement. If educators would bridge the gap in the story of dependence of one step upon the other steps, they would at the same time bridge the gap of needed appreciation for the farmer's role by the city dweller who depends upon that role.

The foregoing observation may be applied for illustrative purposes to the production of a cotton shirt. In ideal lesson planning, the teacher would emphasize all appropriate chemical formulas, physical laws, biological principles, and mechanical processes involved in each of the intermediate steps from the planting of the cotton seed. The intermediate steps include (1) cultivating, (2) picking, (3) ginning, (4) cleaning, (5) combing, (6) spinning, (7) weaving, (8) dyeing, (9) designing, (10) manufacturing, (11) transporting, (12) marketing, and finally, selling the finished shirt to the consumer. In intermediate step number one the teacher could stress such chemical topics as soil fertility and the chemical nature of pesticides used to assure growth and yield of the cotton plant. Mechanical processes which could be stressed in intermediate step number seven would include the internal functioning of the specific machines used to weave the cotton cloth. Biological principles which could be stressed in the final step involving sale of the shirt would include the nature of body temperature,



its regulation, conditions for body comfort, and the body's varying reactions to the sun's rays with woolen or cotton materials.

The foregoing illustrative formula of approach when applied to a study of the multitudinous farm products which have brought pleasure and security to the city would help to

increase student appreciation for the role of the farm, enlighten the consumer regarding the various types of work activities involved in producing farm products, increase understandings of specific chemical, physical, biological, and mechanical activities in production, create closer social bonds between urbanite and farmer,

stress science as the common link between urban and rural, provide a wealth of new, different, and stimulating ideas for agricultural lesson planning, and take both the city dweller and the farmer himself back to the soil from whence cometh their strength. □

## Camping Experiences Develop Leadership

W. T. JOHNSON, Executive Secretary,  
New Farmers of America,  
North Carolina,  
A. and T. College, Greensboro

Throughout the United States and many other countries, camping has been a type of program designed to supplement the training which youth receive in the public schools. Therefore, most camps are conducted in summer while schools are closed for summer vacation.

It is important that counselors and directors of *any* camp should have a philosophy based on sound concepts of life, and should translate this philosophy to the campers through their daily lives. To do this they must emphasize through daily activities such values as truth, love, goodness, kindness, loyalty, faith and honesty. Through the efforts of counselors and directors these virtues—which are basic for every great and useful life—are put into practice. Not only are the personal lives of the counselors and directors important, but the general atmosphere, the moral tone and cultural pattern around the camp should help to imbed the values in the camper's character.

It is generally accepted that camping offers experiences that will aid youth to become desirable citizens, personally broadening experiences which will develop self-reliance, poise and maturity, and opportunities to meet a wide cross-section of interesting young people from all sections of the state, which should have untold value on the future leaders.

Most camping programs are geared to give youth additional training in educational, recreational and leadership activities that will help them in life, but in such a way that it seems like play. Such programs are planned to stimulate a desire for achievement, and give motivation for a purposeful life.

The camping program at the S. B. Simmons Memorial Camp (New Farmers of America) is no different from that of other camps. The major objective is to give each camper a true sense of values and awaken in him a desire to develop into a fine person.

### Leadership

Every youth attending the camp receives leadership training from the beginning. His educational program begins, really, when he reaches camp. Counselors, or their representatives, register them. The camp director distributes to each an outline of the camping activities, and makes assignments to cabins. Each camper then receives practical experience in getting in order his home for the next five days; he meets other NFA Chapter members; the cabins are organized individually, and in each a candidate is selected to run for camp chief. A committee is appointed to prepare the ballot.

Assistance is given the candidates in preparing for campaign speeches, which are given on the first night of camping immediately after the 8:00 p.m. Vesper Service. (Assignments are made for planning Vesper Services—campers from each cabin participating one night during the week.) Tuesday



Each weekend, the NFA members in attendance at the S. B. Simmons Memorial Camp, North Carolina, make a boat trip to the outer banks.



NFA members enjoy a swim at the S. B. Simmons Memorial Camp. Each week a group of boys like this may be seen at the camp where they receive first hand instruction in water safety.



morning following breakfast the voting is conducted by the use of secret ballot.

Advisors are assigned as counselors for each cabin, and one teacher is elected as chief counselor to work with the camp chiefs. The chief counselor, the chief, the advisor of each cabin, and the candidate for chief serve as a camp council to handle any problem that arises at camp during the week. Campers are organized for instruction and recreational activities, and advisors are assigned to work with each group.

#### Recreation

Much time is spent by those in charge of the camp program in planning wholesome recreation. Recreation is engaged in during the afternoons and at other leisure times. Usually, the afternoons are spent participating in volley ball, soft ball, basketball, horseshoe pitching, archery, swimming, fishing, boating, nature study.

No camper is permitted in the water unless the lifeguard is on hand.

After the evening Vesper Service, there may be conducted fish fries, stunt programs, talent hunts and dramatics. While this might be considered recreation, it, too, is a form of leadership, for the campers carry out these activities under the watchful eyes of the advisors, counselors, and camp director.

#### Educational

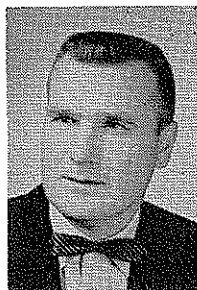
Arrangements are made for organized instruction in class for two one-half days each week. Each youth attending the camp receives training in arts and crafts, practical electricity, and forestry. A special instructor gives training in arts and crafts; representatives from Duke Power Company, Carolina Power and Light Company, and the Virginia Electric Power Company guide the boys in the practical use of electricity; the State Department of Conservation and Develop-

ment furnishes representatives to give instruction in forestry, and the boys are made aware of the importance of our forests and procedures necessary to increase their value.

#### Summary

In carrying out all activities of the camp, campers are given participating leadership experiences in planning the activities, preparing speeches, presiding over meetings, participating in the discussions, preparing programs for Vesper Services, and planning evening entertainment. Too, all activities are designed to supplement the campers' educational, recreational and leadership experiences.

The success of the camping program is not due to one or more individuals but to the teamwork of our whole organization. The sound judgment of the late S. B. Simmons guided the organization through the formative period. □



## Leadership Training Camp

For Future Farmers Can Be Fun, as Well as Educational

JACOB J. JAVORNIK, Vo-Ag Instructor, Clymer, Pennsylvania

Leadership training camps for Future Farmers can be recreational as well as educational. Camping is an important part of the program of work for vocational agriculture teachers of Indiana County, Pennsylvania.

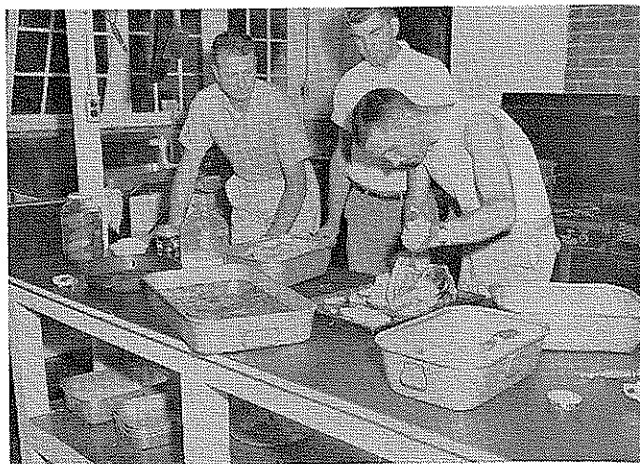
W. W. Schrock, County Supervisor, emphasizes yearly the importance of leadership training for FFA officers, both on the junior and the senior high

school levels. Our County Supervisor appoints a three teacher committee to select the camping grounds and set the annual dates and complete the schedule.

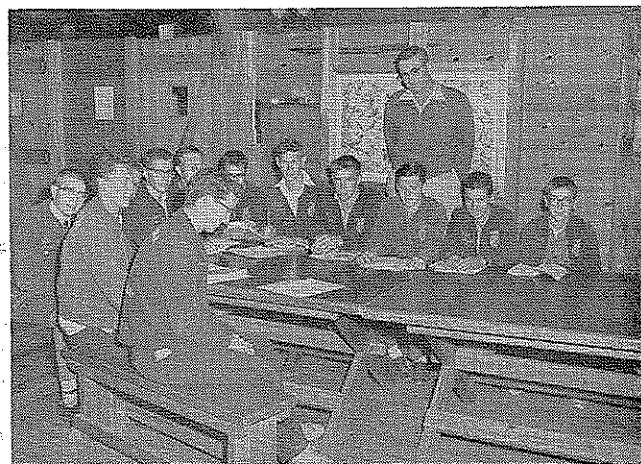
For the past four years we have selected camping sites and picnic areas that have suitable quarters to house the 100 member FFA groups and their teachers from nine schools

representing a two county area. Pennsylvania has numerous parks that offer facilities to house our groups.

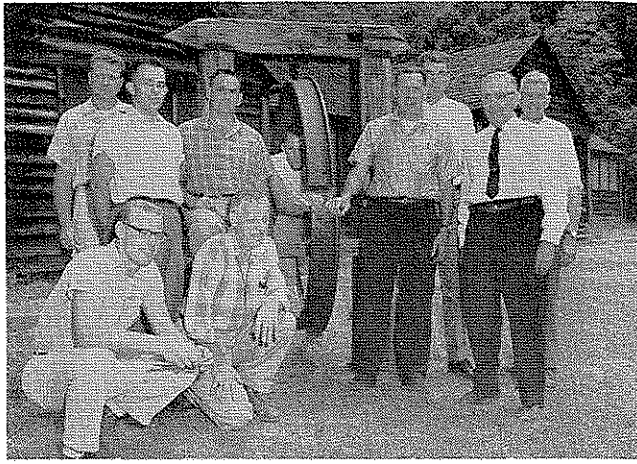
Teachers are given assignments as to their teaching duties in various offices. The FFA members are placed in groups as to the office they now hold in their respective chapters. Two sessions are held daily both morning and afternoon involving one and one-



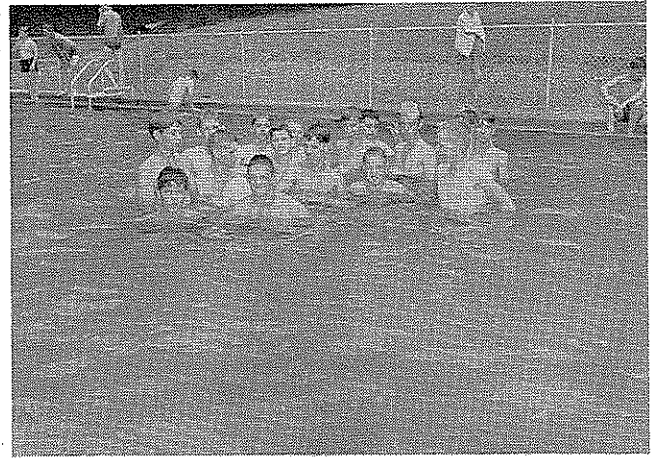
These three vo-ag instructors, Joseph Moore, James McMullen, and Fred King, prepared daily meals.



William Clendenen, vo-ag-instructor, prepares boys for the office of President.



Vocational agriculture teachers and others who directed the camp. Kneeling left to right: Overdorff, R. E. Steffy. Standing (l to r): Joseph Moore, Gerald Kiger, Orin Jacquish, Fred King (hiding back of gong), W. W. Schrock (county supervisor), James McMullen, William Norman (county superintendent of schools), and Ken Weister.



FFA boys at leadership training camp take time out for recreation. (Blue Knob State Park, Pennsylvania)

half hours in length for each. Immediately following each afternoon session, swimming, softball, and horse-shoe pitching are available.

Prospective junior FFA members are trained in an office of their choice since they do not hold an office in their regular programs.

Three teachers are designated to do the cooking and purchase the necessary food, while chapter members and advisors are responsible for the serving of meals, based on a rotation system. The evening program consists of camp tours, a daily schedule of movies, and group singing.

There are nine departments of vocational agriculture in this two county group. The training camp is provided for one week. Each chapter represented is responsible for financing their own students.

Camping has provided an opportunity for leadership training and wholesome recreation pleasantly inter-mixed during one week in the schedule for the summer. □



## Characteristics of State Supervisors and the Situations in Which They Work\*

ROBERT E. TAYLOR, Teacher Education, Ohio State University, Columbus

Everyone has his own image of the state supervisor of vocational agriculture and the situation in which he works; yet the literature reveals relatively little about them as a group. As a part of his study on an in-service education program for state supervisors, the author determined selected characteristics of supervisors and the situations in which they work. These data should be of interest to teachers and others who are contemplating careers in supervision.

The study involved state supervisors of vocational agriculture in the forty-eight contiguous states, excluding Arizona. A total of 213 responses were received from supervisors, represent-

ing 89 per cent of the study universe. Thirty selected chief state school officers and state directors of vocational education were included in the study.

### Overview

It is recognized that there is no "average" supervisor; however, it is helpful to reconstruct, in a generalized sense, the "typical" state supervisor of vocational agriculture. The average state supervisor is fifty years old and nineteen years away from mandatory retirement. He has been in supervision over fourteen years and has had fifteen years of additional educational experience, with eleven of these years as a teacher of vocational agriculture and the remainder in other educational work. He typically holds the Master's degree or its equivalent in education or agricultural education and usually has some course work in supervision and/or administration of education.

### Selected Characteristics of State Supervisors

Table 1 provides a more detailed description of head state supervisors and staff supervisors.

Generally speaking, these data are self-explanatory. As would be expected, head supervisors were, on the average, older than staff supervisors. Within the next five years, 14 state supervisors will reach mandatory retirement age; however, retirement does not account for all vacancies in supervision. Based on the period 1947-1959, there were 43 new head state supervisors and 154 new staff supervisors. Using these figures and assuming a constant rate of turn-over, at least 3 head supervisors and 12 staff supervisors are needed for replacement each year. This turn-over would seem to indicate a need for both pre-service and in-service education for supervisors.

\*This is the second of three articles based on the author's Ph.D. dissertation, *An In-Service Education Program for State Supervisors of Vocational Education in Agriculture*, 483 pages, The Ohio State University Library.

Table 1. A description of selected characteristics of state supervisors.

Characteristic	Head Supervisor		Staff Supervisor	
	Mean	Range	Mean	Range
Age	53.2	35-65	49.3	27-69
Number Years to Mandatory Retirement	15.7	1-35	19.8	1-41
Number Years of Experience in Supervision	16.7	1-37	13.4	1-34
Number Years in Vocational Teaching	11.6	2-32	11.6	3-28
Number Years in Other Educational Work	4.7	1-12	3.7	1-23

While the previous data might indicate that supervision is only a stepping stone, the number of years of experience in supervision of the respondents points out that for a large number, this is a career field. An investment in an in-service education program seemingly would pay dividends over an extended period of time.

#### *Professional Preparation of Supervisors*

It was found that 94 per cent of the head supervisors and 81 per cent of the staff supervisors have the Master's degree or its equivalent in semester hours. Approximately one-third of both groups have completed some additional graduate work beyond the Master's degree. Most state supervisors have pursued graduate work in some phase of education rather than technical agriculture. Less than five per cent of the supervisors *majored* in educational supervision and administration. One-third of the supervisors reported no formal training in supervision and administration. An additional 12 per cent reported four or less semester hours in these areas. From this, one might infer that their graduate work had been directed primarily toward developing additional competencies as a teacher and they, therefore, did not take advanced work in areas of supervision and administration.

#### *Characteristics of the Situation in Which Supervisors Work*

In projecting this study of a professional in-service training program for state supervisors, it was believed that there were a number of factors inherent in their job situations which were related to their needs and interests in in-service education.

#### *Professional Leave Policies*

Interestingly enough, approximately one-half of the supervisors responding to the question concerning professional leave policies in their departments indicated that no policy was available. An additional nine per cent of the respondents indicated an undefined professional leave policy was in effect or did not reply to the question. It is encouraging to report that 26 supervisors representing 17 states indicated that leave with full pay was available. It was possible to check the internal consistency of supervisors' responses in only seven of these 17 states where more than one supervisor had replied. The data indicated that supervisors in three of these seven states presented uniform replies concerning professional leave policies. Responses from supervisors in the other four states were varied, indicating disagreement on essential features of personnel policies.

Nineteen per cent of the respondents indicated that professional leave was available, but without pay.

In most cases supervisors reported that their professional leave policies do not differ from those of general education personnel in the state department of education.

It is promising to note that 34 per cent of the supervisors do have professional leave policies extending for at least a five-weeks period. It, also, should be pointed out that 45 supervisors had leave policies which could be extended for a full year.

The question of professional leave policies for state supervisors was, also, directed to 30 chief state school officers and state directors of vocational education. In comparing the responses of these 30 superiors of state supervisors with the responses of the

corresponding head supervisors in their states, it was found that in only 27 per cent of the cases was there uniformity of reporting on the essential features of the department's professional leave policies. It would seem that an essential step in developing an in-service education program for state supervisors would be to clarify professional leave policies and acquaint supervisors with the details of these policies.

The maximum period allowed under professional leave policies was asked this group. Eleven did not respond. This could substantiate the contention that professional leave policies are not objectively defined and, hence, state supervisors can not be aware of the essential features of their professional leave policies.

#### *Salary Incentives for Advanced Degrees*

In only a few instances do state departments of education provide salary allowances for advanced degrees. Fifteen supervisors reported that policy provides salary increases for the Master's degree. The range of these allowances was from \$200 to \$1425. In fairness, it should be pointed out that a number of supervisors reported that the Master's degree was a requirement for their position. From this, one might infer that this factor was considered in establishing their salary level.

Only six supervisors indicated that their department provided a salary incentive for the Doctor's degree and indicated a specific amount. Eleven additional supervisors said that there was a financial allowance for Master's and Doctor's degrees, but did not give the amount. This type of response gives honest rise to questioning the objectivity and reliability of these policies.

#### *Restricting or Prohibiting Factors in In-service Education*

Time, finance, and lack of suitable training activities were the three main restricting or prohibiting factors reported by supervisors. The chief state school officers and state directors gave time and finance, but substituted distance for lack of suitable training activities, which they listed fourth. It should be pointed out that problems of time and finance could be greatly alleviated by the availability of professional leave policies which provide financial assistance.

*Preferences for In-service Education*

Supervisors were almost equally divided in their choice between credit and noncredit in-service education activities. Part-time in-service activities or those of several weeks' duration were preferred over full-time activities. Two to three weeks activities were the most popular choice, with 37 per cent of the supervisors indicating they would participate in activities of this length. Twenty-five per cent of the supervisors indicated an interest and willingness to participate in more

extensive in-service education activities.

There is a difference of opinion between head supervisors and staff supervisors on the best time of year for in-service education activities. The preferred time for head supervisors is winter, whereas the most popular choice of staff supervisors is summer. This difference in preference gives rise to the question of whether in-service education activities for the two groups should be scheduled at different seasons of the year; however, it was evident that either a summer or winter

schedule should attract substantial representation from both groups.

**Supervisors' Suggestions for Facilitating In-service Education**

Supervisors' suggestions for facilitating in-service education grouped into two large categories. One was to provide some specialized training for supervisors beyond the state on a national or regional level. The second suggestion was to provide some financial assistance to supervisors for professional improvement activities. □

## Educational Values of FFA Contests in Missouri

VINCIL WARREN, Vo-Ag Instructor, Lamar, Missouri



Contests have been a subject of discussion among workers in the field of vocational agriculture since their inception. Their value has often been questioned from the educational point of view. As a result of this situation, the following study was completed as a part of the requirements for a master's degree in Agricultural Education at Colorado State University.

A jury of experts was selected to study five FFA contests, namely: parliamentary procedure, dairy products, meats, field crops, and farm mechanics. This group of vocational agriculture teachers, state supervisors and teacher trainers developed and validated criteria for evaluating the five selected contests.

Questionnaires were formulated and submitted in 1957 and 1958 to a randomly selected group of Missouri teachers of vocational agriculture with contest experience. Individual contest questionnaires were sent to former FFA contestants from the schools of the participating teachers. Usable returns were received from 88 teachers and 258 former students of vocational agriculture.

For each contest the number of responses required to reach the upper and lower limits of significance were computed. The "H" test was applied to the data for statistical analysis. Criteria items for which favorable responses attained or exceeded the upper limit established were accepted;

criteria items for which responses were at or below the lower limit were rejected and determined as not satisfying the educational needs of the students.

Of the 79 criteria items used in evaluating the five contests, 29 were accepted, 22 rejected, and 28 were found not to be significant. The following table presents these data.

Table 1. Summary of Criteria items accepted, rejected, and considered non-significant by teachers and/or students in the evaluation of the five contests.

Contest	Number of items evaluated	Number of items accepted	Number of items rejected	Numbers of items considered nonsignificant
Parliamentary procedure	17	6	3	8
Dairy products	15	7	6	2
Meats	14	3	3	8
Field crops	16	7	6	3
Farm mechanics	17	6	4	7
Totals	79	29	22	28

The responses of teachers indicated that except for the meats contest, the subject matter content in the five contests used in this study was included in the vocational agriculture curriculum. Teachers and students were in agreement as to their ratings of all contests. The responses of teachers indicated that there was considered to be little carry-over of interest and motivation arising from contests into

other phases of the vocational agriculture program.

Slightly over one-third of the criteria items of the five contests were accepted by students and/or teachers; thus it can be assumed that the contests were meeting some of the educational needs of boys, as measured by these criteria. However, in that approximately one-fourth of the

criteria items found in the five contests were rejected, it is concluded that contests were at the same time failing to meet some educational needs of the students as measured by these items of criteria.

It was concluded that contests should be given continuous examination in order that they can be kept abreast of the rapidly changing agricultural technology and corresponding needs of the students. □



## CHECKBOOK FARM MECHANICS

How much mechanics shall I teach?  
 What skills place in my plan?  
 What pieces of equipment shall  
 I teach my boys to man?  
 How shall I treat the "out-of-school"  
 Who want my help and shop?  
 If I'm to do all should be done  
 What shall I add and drop?

The hammer, saw and farming square  
 Like compass, sword and pen,  
 Have each in turn played noble parts  
 In framing lives of men.  
 But hand and mind have common cause  
 Let none of us forget,  
 That for each skill the hand performs  
 It owes the mind a debt.

Give a man, or child, a puzzle,  
 Or trick to him that's new  
 And when asked to respond he'll say,  
 "What is it I'm to do?"  
 Only the hand can load a gun,  
 Only the eye can aim,  
 Only the mind can plan the shot  
 And reap the praise or blame.

When it comes to farm mechanics  
 And all that term implies—  
 From buying field machinery  
 To grinders, saws and dies—  
 And then to keep them in repair  
 And ready for the day—  
 Have all you need but only those  
 You can make pay their way.

This is the test each teacher must  
 Apply to every skill,  
 For only those of need today  
 Can save or pay a bill.  
 Each crop and stock production line  
 Has its own peaks and pits,  
 But tools and skills which don't pay out  
 Will give that owner fits.

The ways for teaching skills in shop  
 Are not too hard to learn  
 But what and when to buy and have  
 Takes on a different turn.  
 The mind must always lead the hand—  
 The plans must first be wrought,  
 The skills to teach then fall in line  
 And we'll teach as we ought.

A. J. Paulus, Tennessee  
 11/9/61

## Welding Skills—What and Where Should They Be Taught?

MORRIS NORFLEET, Instructor, Agricultural Education,  
 Purdue University

LEE RIGGS, Graduate Assistant in Agricultural Education,  
 Purdue University

### Introduction

I want to teach welding, but I always have a problem of deciding what skills to teach and at what grade level these skills should be taught. This is a frequent comment made by vocational agriculture teachers faced with the problem of teaching the necessary welding skills to meet increasing demands of modern mechanized agriculture.

Various methods have been used to select and integrate welding skills into the total course of study. Among others, the following procedures have been used: 1) requesting farmers to identify skills they need most on the farm, 2) seeking the aid of department advisory councils in recommending

skills to be included, 3) having students identify skills they desire to learn, 4) teaching only those skills the teacher feels competent to teach, and 5) following explicitly the courses of study recommended by teacher-trainer and state supervisory staff members.

Whatever the procedures used to secure basic data, in the final analysis the teacher has the responsibility for making the decision on what skills to include in his course of study. The teacher is competent in making these decisions because: 1) he has been trained in analyzing data, 2) he is in constant contact with the demands of agriculture on each farm in his community, interpreting and integrating the needs of local farmers

in his course of study, 3) he is aware of the abilities of his students, interpreting these abilities into readiness for developing welding skills, 4) an abundant supply of welding information is available to him from the agriculture leaders in his state. The correctness of his decision will be dependent on the validity and reliability of the data on which he bases his decisions.

### Problem

Assuming the judgment of instructors experienced in teaching welding should provide valid and reliable data; in 1961 a study was conducted in Indiana to determine which arc

and oxyacetylene welding skills, in the judgment of experienced teachers, should be taught to high school, young farmer and adult farmer classes.

### Procedure

A check-list of arc and oxyacetylene welding skills was compiled to formulate the survey instrument. The list of skills were reviewed by staff members of the Departments of Agricultural Education and Agricultural Engineering, Purdue University for ambiguous terms and comprehensiveness of skills listed.

A list of vocational agriculture departments possessing welding equipment was compiled. Departments in which welding was not "regularly taught" were eliminated. By using a table of random numbers, a random sample of seventy-five (75) teachers was then drawn from among those "regularly" teaching welding in their departments. The check-list of arc and oxyacetylene welding skills was mailed to each randomly-selected teacher. The list of skills contained in the check-list is shown in Tables 1 and 2 below.

### Findings

Eighty-seven (87) per cent of the seventy-five (75) teachers returned usable questionnaires. The data from these questionnaires are summarized in Tables 1 and 2. The first step in the statistical analysis was to set up for each item on the survey forms a table of frequencies. From the table of frequencies a table of proportions or percentages for each item was formed by dividing each cell frequency by the total number of teachers responding to the survey. The percentages were transformed by means of arcsin to produce an approximately constant variance and normalize the population. The difference between means of levels that skills were taught and difference between means of the items were tested by analysis of variance. Tables 1 and 2 indicate the total percentage of teachers checking the skills they currently teach or think should be taught at the various levels. The first column indicates the per cent of teachers checking each skill. The second column under each level is provided for individual use in selecting welding skills to be taught in local situations. This may be accomplished by inserting the number of class hours to be spent in teaching each skill or some may prefer to simply check the skill

Table 1. Per cent of teachers checking each arc welding skill that should be taught at different levels in vocational agriculture.

Skills	Fr.		So.		Jr.		Sr.		Y. F. Class		Adult Class	
	1*	2**	1	2	1	2	1	2	1	2	1	2
	%		%		%		%		%		%	
I. General												
1. Determining a need for a welder on the farm	32		34		40		35		38		38	
2. Selecting an arc welder for the farm	23		28		37		32		37		37	
3. Selecting welding accessories	28		36		51		37		38		31	
4. Selecting electrodes for farm welding	34		42		63		42		42		38	
5. Properly installing electric welder on the farm	11		23		40		32		32		33	
6. Welding Safety	45		54		69		55		40		35	
†7. Care and Maintenance of welder					2				2		2	
II. Fundamentals												
8. Setting correct amperage	48		51		55		40		35		35	
9. Striking and holding an arc	49		51		52		37		35		32	
10. Preparing metal for welding	45		48		52		37		34		32	
†11. Removing slag between passes			2		2				2		2	
III. Flat and Horizontal Positions												
12. Run single pass (stringer) bead	45		54		48		32		34		32	
13. Restart continuous bead	39		49		43		28		28		23	
14. Run a weave bead	31		51		45		32		29		26	
15. Build up worn surfaces (padding)	20		37		58		46		34		31	
16. Make square (plain) butt weld	29		46		48		35		32		28	
17. Make grooved (V) butt weld	26		45		51		43		31		28	
18. Make lap and fillet weld	23		46		54		42		34		28	
19. Make multiple pass fillet weld	19		42		52		42		31		26	
20. Make corner and edge weld	17		37		46		40		31		22	
IV. Vertical Position												
21. Make vertical down single pass	8		28		57		49		38		35	
22. Make vertical down fillet weld	5		18		55		45		34		32	
23. Make vertical down butt weld	6		18		52		42		34		32	
24. Make vertical up single pass	9		25		55		42		37		34	
25. Make vertical up fillet weld	8		20		54		43		32		32	
26. Make vertical up butt weld	9		23		52		45		37		35	
V. Miscellaneous Welding Operations												
27. Use of carbon arc torch												
a. Solder with arc welder	9		27		48		35		38		31	
b. Hardsurface with powder			15		38		37		37		32	
c. Brazing with carbon arc torch	2		18		45		42		35		34	
†d. Loosening rusted bolts with carbon arc torch			2						2			
†e. Heating and Bending with carbon arc torch					3		2		5		2	
28. Make high carbon steel weld	2		15		23		26		28		23	
29. Make cast iron weld	5		18		40		43		31		32	
30. Cutting with arc welder	28		48		48		43		31		37	
31. Hardsurfacing with electrode	3		15		43		48		40		37	
32. Controlling expansion and contraction	14		32		42		43		36		34	
33. Identifying good welds	34		46		55		45		40		32	
†34. Welding galvanized pipe					2		3		3		5	
†35. Overhead welding			2		2				3		3	
†36. Aluminum welding							2		2		3	
37. Others												

#### Column:

\*1) Per cent of teachers teaching the skill at this level.

\*\*2) Check in this column the skills you will teach.

† Skills added by the suggestion of teachers.

they wish to teach. The thinking of other teachers serves as a guide in selecting the skills and the most appropriate level to teach each skill.

In analyzing Table 1, arc welding

skills, there was a significant difference at the .01 level between the means of the various levels that welding skills are taught, also between the skills taught. The average number

Table 2. Per cent of teachers checking each oxyacetylene welding skill that should be taught at different levels in vocational agriculture.

Skills	Fr.		So.		Jr.		Sr.		Y. F. Class		Adult Class	
	1*	2**	1	2	1	2	-1	2	1	2	1	2
	%		%		%		%		%		%	
<b>I. General</b>												
1. Determining a need for a welder on the farm	12		22		28		25		22		22	
2. Selecting equipment needed for welding and cutting	15		22		26		25		22		20	
3. Selecting welding rods and fluxes	18		25		32		23		23		25	
4. Assembling the apparatus	23		34		38		28		20		20	
5. Welding safety	23		35		49		40		26		25	
<b>II. Fundamentals</b>												
6. Selecting the right size torch tip	23		31		35		25		23		22	
7. Turning on and adjusting oxygen and acetylene gas pressures	25		32		37		26		22		20	
8. Testing for leaks	25		32		35		26		22		22	
9. Lighting and adjusting the flame	25		32		34		26		22		22	
10. Turning off the torch and draining the hoses	25		34		35		28		22		20	
11. Maintaining the equipment	22		32		32		25		20		20	
<b>III. Fusion Welding</b>												
12. Preparing joints for welding	17		35		32		26		20		20	
13. Carrying a puddle without a welding rod	15		29		32		23		18		15	
14. Carrying a puddle with a welding rod	17		29		32		23		22		17	
15. Making butt welds in steel	8		23		34		23		20		17	
16. Making fillet welds in steel	6		23		31		22		17		17	
17. Welding in horizontal position	8		23		35		26		18		17	
18. Welding in a vertical position	3		15		32		25		14		14	
19. Welding in an overhead position	2		11		26		22		12		12	
<b>IV. Braze (bronze) Welding</b>												
20. Preparing steel joints for braze welding	8		28		35		26		20		17	
21. Tinning the surface	6		28		34		25		15		12	
22. Adding metal to and carrying the puddle	6		28		34		26		22		18	
23. Braze welding in a horizontal position	6		23		35		26		22		17	
24. Braze welding in a vertical position	2		11		26		23		15		12	
25. Braze welding in an overhead position			8		22		20		14		11	
26. Braze welding cast iron	3		15		28		26		18		12	
27. Building up worn surfaces by brazing	3		14		35		32		20		14	
<b>V. Other Oxyacetylene Welding Operations</b>												
28. Hard surfacing	3		9		26		29		17		12	
29. Silver brazing			5		12		9		2		3	
30. Cutting thin steel (less than 1/4 inch)	15		25		34		35		18		20	
31. Cutting thick steel (more than 1/4 inch)	12		23		34		37		20		22	
32. Cutting cast iron	3		11		25		29		15		15	
33. Controlling expansion and contraction	6		18		29		29		20		20	
34. Controlling flashback	9		23		25		26		17		15	
35. Identifying good welds	18		32		35		34		22		18	
†36. Soldering with oxyacetylene torch					2		2		2		2	
†37. Heating and bending					2		2		2		2	
38. Others												

Column:

\*1) Per cent of teachers teaching the skill at this level.

\*\*2) Check in this column the skills you will teach.

† Skills added by the suggestion of teachers.

of teachers teaching each skill was computed for each level: freshmen 13.8, sophomore 22.5, junior 31.8, senior 25.9, young farmer 21.0, and adult farmer 20.7. This indicates that more teachers believe arc welding skills should be taught in the junior year followed by the senior year.

In Table 2, oxyacetylene welding skills, there was a significant difference at the .01 level between the means of the various levels that welding skills are taught, also between the skills taught. The average number of teachers teaching each skill was also computed for each level: freshmen 7.7, sophomore 15.2, junior 20.6, senior 17.1, young farmer 12.3, and adult farmer 11.2. The data indicates that more instructors teach oxyacetylene welding skills at the junior level than at any other level followed closely by the senior year.

### Conclusions

Through the analysis of the thinking of experienced teachers that "regularly" teach welding, basis can be established to assist others in selecting the arc and oxyacetylene welding skills that should be included in the course of study in vocational agriculture.

A thorough analysis of Tables 1 and 2 will provide a basis for determining:

1. The welding skills that should be taught to freshmen, sophomores, juniors, seniors, young farmers, and adult farmers.
2. The sequence that the various skills should be taught to maximize student learning. □

## FUTURE THEMES

JUNE—Upgrading Supervised Farming Programs

JULY—Planning Local Programs

AUGUST—Building School Relationships

SEPTEMBER—Selecting Farming Programs

OCTOBER—Developing Young Farmer Programs

# Are You "Keeping Up" With the Agricultural Engineering Aspects of Farming?

CARLTON E. JOHNSON, Dept. of Agricultural Education, The Ohio State University, Columbus

Are you "keeping up" with the agricultural engineering aspects of farming in your teaching? Perhaps a check of your program of instruction with the objectives suggested by the Committee on Vocational Agriculture Teacher Education of the American Society of Agricultural Engineers which are included here will be of help. These are objectives suggested in relation to pre-service and in-service preparation of teachers and have some implications for what is taught in high school courses. If you are interested in some means of attaining these objectives, you will want to see the magazine article.\*

The Agricultural Engineering phases of farming are perhaps the most neglected phases in the vocational agriculture curriculum. With the trend toward requiring more of the broadening academic courses in the college curricula it has become increasingly difficult to provide adequate pre-service courses for students preparing to teach vocational agriculture. Likewise the college curricula for professional agricultural engineers has continually become more science oriented with more courses in mathematics, physics and related phases of engineering fundamentals and theory. Therefore present and proposed courses for prospective teachers of vocational agriculture and those of-

ferred for graduate credit need to be examined carefully to determine if they are filling the needs of teachers for helping farmers and high school boys to do a better job of farming. In-service courses and workshops are needed to supply the missing links of knowledge which cannot be offered for graduate credit or for those teachers who may not need a full course on certain phases of farm mechanics. A watered-down engineering course never was adequate and has no excuse for its existence. These courses need to be designed for the needs of teachers.

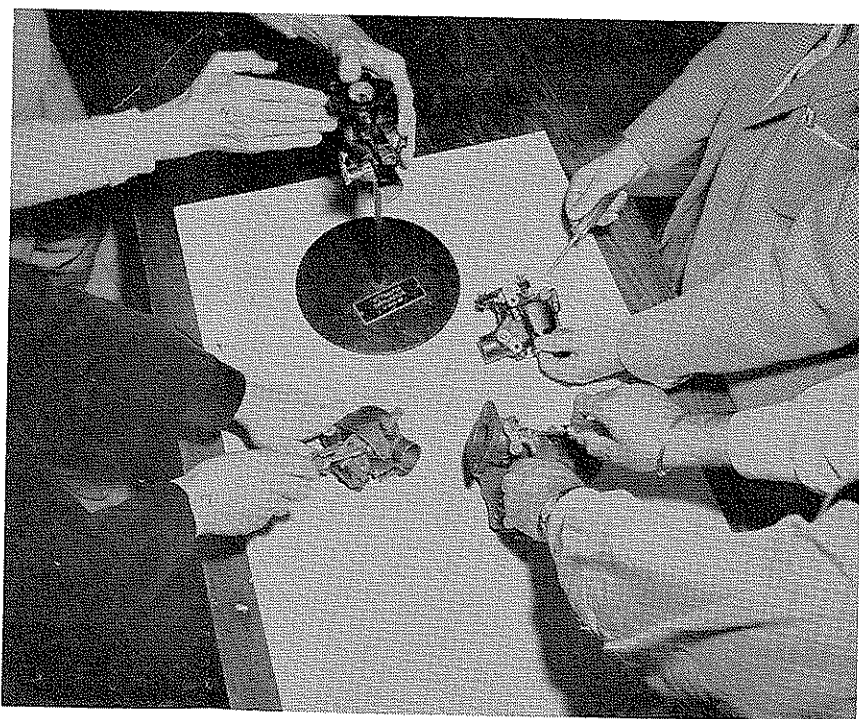
Because many teachers of vocational agriculture devote 40 to 60 percent of their high school teaching time to the agricultural engineering phases as compared to 25 to 40 percent commonly spent in the past, trainees need an increased amount of technical education in this field. There is the danger that the wagon of methodology is well oiled and in excellent condition but an examination of the contents in the agricultural engineering phases may show that the wagon is nearly empty.

This absence of content is readily detected by farmers and students.

The term "farm mechanics" is as controversial as ever. In its place some schools are using the term "Agricultural Engineering Technology," some "Agricultural Mechanics," "Mechanized Farming," etc. Regardless of what it is called the ASAE committee\* suggests among other things that the following points need to be kept in mind in courses for teachers:

1. That preservice, graduate, and noncredit in-service courses be considered parts of a total program and be planned to supplement each other.
2. That staff members for teaching these courses be selected on the basis of their special abilities and field experience as well as on academic attainments in order to maintain a proper balance between applied and theoretical understandings.
3. That agricultural engineering technology courses provide fundamental training in basic principles so that teachers can keep up-to-date and

\*This is a report of the Committee on Agricultural Teacher Education, Education and Research Division, American Society of Agricultural Engineers (most of whom have a background of vocational agriculture teaching and understandings) in collaboration with an advisory group of agricultural education specialists. The agricultural education specialists are Frank Anthony, Department of Agricultural Education, Pennsylvania State University; Harry W. Kitts, Department of Agricultural Education, University of Minnesota; David Hartzog, Department of Agricultural Education, State College of Washington. The title of the report is "Agricultural Engineering Phases of Teacher Education in Agriculture," *Agricultural Engineering Magazine*, Vol. 41, No. 6, pp. 382-385, June, 1960. American Society of Agricultural Engineers, St. Joseph, Michigan.



The training that is necessary to direct the hands of these future teachers of vocational agriculture has been suggested by a committee of the American Association of Agricultural Engineers.



adopt new techniques as they are developed. Additional courses emphasizing the application of principles, methods of teaching, and development of confidence should be provided to aid the trainee directly in his teaching.

4. That course work in agricultural engineering technology for teachers of agriculture should be related closely to the various enterprises in agricultural production. The ultimate goal of technical education is the production and processing of high quality agricultural products at low cost with minimum physical effort and make possible a high standard of living on the farm.

5. That all five instructional areas in agricultural engineering involve the use of physics and mathematics. It is, therefore, recommended that students be well grounded in these subjects at the high school level and that they take college courses in these subjects before taking courses in agricultural engineering technology. This will result in a saving of time and a better comprehension of subject matter on the part of the student.

Although the listing of objectives is intended to be rather complete, not all are of equal importance in all geographic areas. *The objectives have been listed as general guides—not as rigid outlines.* Some attempt was made to list the more important objectives first, but the numbering should not be interpreted as a definite priority ranking.

#### Pre-Service Education

##### *Farm Power and Machinery*

Develop understanding of basic principles involved, judgment, and ability to:

1. Recognize and identify the fundamental principles involved in machines and the relationship of mechanisms and systems to processes and functions; and recognize that basic principles and processes are unchanging but that mechanisms vary with systems employed in machine design.

2. Select power units and machines with regard to adapting systems of machines to types of farming, considering the compatibility of individual machines with other components of the machinery system; size and number of power units, hours of utilization, annual cost, and availability of custom rental and dealer service.

3. Operate, adjust, service and maintain farm tractors, including spark ignition and diesel types, and small internal-combustion engines.

4. Operate, adjust and service field machines including lubrication, recognition of malfunction such as sources of harvest losses; make the operating adjustments and properly hitch implements; calibrate planting, fertilizing and spraying equipment.

5. Locate and remedy common operating troubles due to wear of parts, breakage, misalignment, and other improper functioning.

6. Plan and execute a program of preventive maintenance including protection-shelter, rust prevention, periodic inspection and adjustment to compensate for wear, and repair in anticipation of breakage and improper function.

7. Make repairs and replace parts.

8. Recognize the need for major repairs involving the use of specialized tools and equipment and determine appropriate methods of getting such work done by a well-qualified service agency.

9. Adjust, adapt and modify machinery to satisfy local conditions such as trash-cover control, hillside operation, specialized crop use and multiple hitching.

10. Determine and use safe operating practices with special emphasis on proper speed, protection from moving parts and stopping the machine to adjust and remove obstructions, and for refueling.

##### *Farm Buildings and Conveniences*

Develop understanding of basic principles, judgment and ability to:

1. Lay out a farmstead and plan an integrated farm improvement program, evaluate existing buildings, analyze the needs for new or remodeled construction, plan new buildings, develop a maintenance and improvement program recognizing basic requirements for farm dwellings.

2. Plan buildings for utilities and production equipment to meet the operating needs of the farmer: elevators, conveyors, water distribution and disposal systems, light and power, feed-storage, handling, and processing devices.

3. Recognize and meet requirements of farm animals and poultry for environmental and sanitation control, such as temperature, ventilation, light and moisture.

4. Select suitable building materials for specific uses, including durability, functional performance, strength, ease of application, availability, economy and appearance. Recognize standard commercial units, grade, estimate

quantities and determine construction costs.

5. Recognize good construction methods and standard building materials.

6. Recognize and be prepared to correct common occupational hazards to life and property; fire, accident, wind, and lightning.

##### *Soil and Water Management*

Develop understanding of basic principles involved, judgment, and ability to:

1. Make land surveys, read soil survey and aerial maps, and run levels and contours by using the farm level. Locate and place grade stakes, and make contour maps.

2. Plan terracing and simple farm drainage systems. Estimate costs of construction and maintenance.

3. Plan and lay out typical irrigation systems, considering the advantages and limitations of the various types and systems.

4. Maintain irrigation and drainage systems including the upkeep of terraces, spillways and ditches; service overhead irrigation layouts and correct defects in both drainage and irrigation systems; apply fertilizers in irrigation water.

5. Plan and lay out farm reservoirs including the choosing of the appropriate site; calculate the expected flow and capacity, determine the procedure in constructing the reservoir, construct adequate spillways, provide outlets and use practices that preserve earthen reservoirs and embankments.

6. Relate equipment and tillage practices to soil erosion control.

##### *Rural Electrification and Processing*

Develop understanding of basic principles involved, judgment and ability to:

1. Plan wiring systems and rewiring for adequacy, convenience, and safety, including determination of probable future electric loads.

2. Select lighting equipment and locate it in the yards, lots, buildings, and work areas to provide adequate illumination.

3. Select electrical home appliances and farm equipment, including motors and controls. Consider safety, quality, energy consumption, life and servicing.

4. Adapt electricity to the farm enterprises, coordinating the equipment with the size and arrangement of the farm buildings.

5. Repair, service, and maintain electrical equipment. Locate and cor-

rect troubles and hazards in connection with fuses, controls, switches, fixtures, cords and wiring, motors, heating appliances, and lamps.

6. Install electrical equipment considering power transmission, equipment ventilation, servicing, safety, etc.

#### *Agricultural Construction and Maintenance (Farm Shop Work)*

Develop understandings of basic principles involved, judgment, and ability to:

1. Promote the establishment of a home farm shop or farm service center.

2. Supervise and assist in planning, equipping, arranging, and managing a school agricultural mechanics shop.

3. Select hand and power tools and shop equipment for the school agricultural mechanics shop and home farm shop, including makes, models, sizes, quantities, and grades.

4. Sharpen, repair, maintain and safely use the common shop tools and equipment.

5. Install, safely use, service, and maintain power tools found in the agricultural mechanics shop.

6. Do electric arc and oxy-acetylene welding, including cutting, bronze welding and hard surfacing.

7. Do hot metal work, including bending, shaping, and heat treating.

8. Do cold metal work, including cutting, drilling, filing, tapping, threading, riveting, and bending.

9. Do sheet metal work, including cutting, bending, and fastening.

10. Do pipe and tubing work and make simple plumbing repairs.

11. Select lumber, hardware and other building materials and calculate bills of material.

12. Supervise and assist with construction and maintenance of smaller farm buildings and equipment.

13. Do painting and glazing. Apply wood preservatives.

14. Construct and maintain adequate farm fences.

15. Do concrete work including building forms, testing materials, preparing mixes, placing, finishing and curing; and laying concrete and masonry building units.

16. Make the more important rope knots, hitches, splices, and halters.

17. Recognize dangers and hazards connected with the use of tools and equipment and guard against them.

#### Recommendations

Here are the recommendations for the objectives for Agricultural Construction and Maintenance (Farm Shop Work), for example, which will give you an idea of the additional information available in the article\* concerning the other phases of agricultural engineering:

1. The agricultural construction and maintenance skills, abilities, and judgments should be taught wherever possible by providing practical experiences and relating these to actual situations.

2. Emphasis should be placed on good work habits and learning rather than on volume of projects completed.

Specifically, quality and standards of workmanship should be consistent with the particular projects involved.

3. The projects selected for construction, repair, and maintenance by students should be of practical value, and typical of the projects emphasized in agricultural mechanics courses for high school students, young farmers, and adult farmers.

4. The equipment and facilities in the teacher training laboratories and in high school teacher training centers should be similar to or superior to the better equipped and organized high school agricultural mechanics shops found in the state. Maintenance and adjustment of this equipment should be especially emphasized in the teacher education program.

5. The students should become safety conscious as a result of employing standard safety practices throughout the agricultural mechanics courses, including use of safety colors, ventilating systems, proper guarding and use of shields, and safe work habits.

The objectives outlined suggest a more thorough background of knowledge for the vocational agriculture teacher than he would teach to his high school students. In checking your program of instruction perhaps some areas are now being overlooked and this report will suggest several new, interesting, and appropriate teaching units. Here is an opportunity to see if you are "keeping up" with the agricultural engineering aspects of farming. □

## A New Look at Farm Machinery Instruction

### Preparation and Instruction Must Keep Pace with Farming

PAUL A. GILMAN, Associate Professor of Farm Mechanics, Thompson School of Agriculture, University of New Hampshire, Durham

#### *Seasonal Training of Teachers*

Customarily agricultural colleges do not offer courses in farm machinery instruction during the summer for undergraduates or graduate teacher preparation students.

How can a vocational agriculture teacher be expected to teach the operation, care and maintenance of up-to-date farm machines unless he has first had a thorough training in this area?

One of the reasons the driver-training program has been successful is because it requires each driver to drive so many hours or miles under the supervision of the competent driver training instructor. Assuming this to be a fact, then the vocational agriculture teacher needs training in the actual operation of the up-to-date farm machines he is to be instructing about.

The only time this instruction can be given effectively under field operating conditions for most machines is during the summer. Farm machinery has changed so rapidly during the last ten years that, unless in-service teachers as well as undergraduate students have an opportunity to take a course dealing with the actual operation of the new machines under field conditions, they will have a very inadequate working knowledge.

*Care and Maintenance*

The care and maintenance of farm machinery can and should be taught during December, January and February in the farm mechanics laboratory. This should aid in making it clear to the students that the farm service center on the farm is a must and is an essential part of their supervised farming program.

Special operational features may well be taught at the time a machine such as a grain drill is reconditioned; this could include band seeding versus broadcast seeding or other comparable management specialties.

*Farm Operation*

The most effective teaching about the actual operation of a machine can best be done on the farm where the student is using or is going to use the machine. This makes the supervised farming visit really functional. Instruction of this type requires excellent understanding and cooperation between the farmer and the teacher.

When the school has a farm or operates a field crop project it may be possible to hold summer meetings in the early evening for a group of students at which time instruction in the operation of a specific machine would

be given and each individual given an opportunity to operate the machine.

*Co-ordinated Program*

To insure successful instruction in farm machinery, the five following factors must be closely co-ordinated:

1. An adequate farm mechanics laboratory should be available.
2. Basic mechanics skills should be mastered by each individual student.
3. Teachers should be adequately trained.
4. A cooperative farmer-teacher relationship must be attained.
5. A well planned mechanized farm service center must be available. □

## Idaho Farmers Evaluate the Farm Mechanics Course of Study

KEITH C. MERRILL, JR., Vo-Ag Instructor, Minidoka Co. H. S., Rupert, Idaho



How do farmers feel about your farm mechanics course of study?—That is how I felt after working on the Idaho Course of Study for over two years. Idaho teachers of Vocational Agriculture had worked hard revising a course of study and had what they considered to be a very practical program based on their experiences and what they figured should be taught.

We know that the teacher of vocational agriculture must keep close to the farmer and the farm if he is to teach those things the farm boy and farmer need the most. Although the Vo-Ag teacher gets close to the problem, in most instances he is not directly involved in the problem. For this reason, the evaluation of the course of study by those directly involved with the everyday problems in farm mechanics on the farm was solicited through a questionnaire. The questionnaire was sent to 117 successful farmers in every area in Idaho where vocational agriculture is part of the high school curriculum. The farmers selected were taken from those who were currently engaged in farming and who had earned the State Farmer Degree during the past 13 years, and those considered to be successful by Vo-Ag teachers and County Agents in the various areas. From a list of 556, at least one name

Table 1. A summary of opinions of farmers, expressed in percentage, who received Vo-Ag training in farm mechanics, whether it should be included in a farm mechanics course of study based on its value on the farm.

Instructional area	Had in high school vo-ag shop		Should be taught in vo-ag shop		Value on the farm		
	Yes	No	Yes	No	Very useful	Some use	No value
Tools and hardware (about 10 hours)	74	26	93	7	70	27	3
Farm carpentry (15 or more hours)	66	34	94	6	71	27	2
Painting (about 4 hours)	36	64	86	14	41	54	5
Cold and sheet metal work (about 10 hours)	43	57	89	11	47	49	4
Forging (about 10 hours)	67	33	92	8	62	34	4
Lettering and drawing (about 10 hours)	28	72	68	32	26	52	22
Rope work (4 hours or less)	26	74	79	21	40	54	6
Arc welding (about 30 hours)	78	22	97	3	84	14	2
Oxyacetylene welding (about 20 hours)	76	24	98	2	84	14	2
Glazing (about 2 hours)	10	90	69	31	26	66	8
Concrete work (about 10 hours)	17	83	90	10	54	44	2
Masonry (about 8 hours)	5	95	83	17	25	68	7
Plumbing (about 6 hours)	26	74	93	7	46	52	2
Farm leveling (about 10 hours)	42	58	97	3	68	32	0
Electrical wiring (about 10 hours)	37	63	91	9	55	39	6
Electrical motors (about 6 hours)	17	83	96	4	66	33	1

Table 1. (Continued)

Instructional area	Had in high school vo-ag shop		Should be taught in vo-ag shop		Value on the farm		
	Yes	No	Yes	No	Very useful	Some use	No value
Engines (5 hours or more)	32	68	97	3	74	25	1
Tractor and maintenance (about 30 hours)	63	37	99	1	91	9	0
Farm machinery (about 50 hours)	51	49	98	2	84	15	1
Construction and repair (about 140 hours)	71	29	99	1	96	4	0
Metal lathe (5 or more hours)	7	93	65	35	16	69	15
Home farm shop (about 5 hours)	28	72	90	10	66	37	3
School shop maintenance (hours as needed)	72	28	93	7	60	36	4

Table 2. A listing, expressed in percentage, showing instructional areas and teaching units in order of importance according to use on the farm.

Instructional area and teaching unit	Value on the farm		
	Very useful	Some use	No value
1. Construction projects—Build and repair farm equipment	96	4	0
2. Arc welding—Welding techniques	96	4	0
3. Tractor care and maintenance—Lubrication, carburetion, etc.	95	5	0
4. Arc welding—Electrodes	95	4	1
5. Oxyacetylene welding—Principles of oxyacetylene welding	92	8	0
6. Farm machinery—Maintenance and repair	91	8	1
7. Arc welding—Principles of arc welding	91	9	0
8. Oxyacetylene welding—Welding techniques	91	9	0
9. Farm machinery—Care and operation	88	11	1
10. Tools and hardware—Sharpening tools	88	11	1
11. Tractor care and maintenance—Safety	86	14	0
12. Farm machinery—Cost of operation	81	16	3
13. Farm carpentry—Bill of material	80	20	0
14. Electric motors—Care and maintenance	79	21	0
15. Tools and hardware—Use and care	77	19	4
16. Engines—Basic principles of engines	76	24	0
17. Farm machinery—Power transmission	75	22	3
18. Farm carpentry—Simple construction projects	75	22	3
19. Arc welding—Use of the carbon arc torch	75	25	0
20. Engines—Parts of engines	73	26	1
21. Electrical wiring—Equipment and fixtures	70	30	0
22. Oxyacetylene welding—Small construction projects	69	26	5
23. Electrical wiring—Farmstead wiring design	68	32	0
24. Farm leveling—Using the farm level	68	32	0
25. Home farm shop—Size and arrangement	66	33	1
26. Electric motors—Motor protection and control	66	31	3
27. Electrical wiring—Wire size	66	34	0
28. Cold and sheet metal work—Soldering	66	34	0
29. Electrical motors—Installation of motors	65	34	1
30. Farm shop—Tools for the home farm shop	65	32	3
31. Forging—Tempering, bending and annealing	64	31	5
32. Arc welding—Small construction projects	64	27	9
33. Tools and hardware—Repair and fitting	64	34	0
34. Forging—Forging techniques	62	34	4
35. Forging—Properties of metal	61	35	4
36. School shop—Tool arrangement	60	36	4
37. Forging—Construction projects	59	38	3
38. Farm carpentry—Kinds of lumber and storage	58	40	2
39. Concrete work—Calculating amounts	58	42	0
40. Concrete work—Curing and finishing	57	41	2
41. Electrical motors—Kind and selection	56	43	1
42. Concrete work—Laying out a building	54	42	4
43. Electrical wiring—Basic electrical terms	52	39	9
44. Plumbing—Cutting, threading and measuring	51	48	1

was selected by random drawing from each school district in Idaho. An additional 40 names were drawn from the total. There was a 75% response to this long questionnaire covering the complete farm mechanics course of study that had been revised by the Vo-Ag teachers. The objectives of the study were:

1. To determine the importance of farm mechanics training in high schools teaching vocational agriculture.
2. To secure information as to which phases of the farm mechanics program were considered most important by the farmers.
3. To determine whether certain phases of farm mechanics were of enough value to be included in a course of study.
4. To see whether the course of study developed by vo-ag teachers was the kind of training needed to best prepare high school boys in the field of farm mechanics.
5. To relate the farm mechanics course of study to the whole program of vocational agriculture so that it might be of value to the entire state as a basic guide for teaching farm mechanics.

An explanation is in order concerning approximate total hours recommended in the farm mechanics section of the total course of study. In Idaho, most vocational agriculture programs are run on a 1-1-2-1 hour basis, one hour for Freshmen, one hour for Sophomores, two hours for Juniors, and one hour for Seniors. Figuring 177 school days required by law, this means a total of  $177 \times 5$  or 885 hours of possible instruction time if a student completed the full four year program. There will be a number of hours taken from this 885 hour schedule for school assemblies, ball games, class meetings and other interruptions. According to surveys taken, Idaho teachers can figure on about 800 total classroom hours for vo-ag. From this same survey, it was revealed that approximately 50 percent of the total time was spent in the area of farm mechanics. It is on this basis that the recommended hours were made for each instructional area in the course of study in farm mechanics.

In the interest of space, a very brief summary of the main areas of the course of study along with the



Table 2 (Continued)

Instructional area and teaching unit	Value on the farm		
	Very useful	Some use	No value
45. Rope work—Rope splicing and halter making	51	48	1
46. Concrete work—Concrete forms and steel reinforcements	51	47	2
47. Tools and hardware—Identification and cost	51	44	5
48. Concrete work—Aggregates and mixes	49	49	2
49. Electrical wiring—Electrical costs	48	47	5
50. Plumbing—Identification of fittings, kind of pipe and tubes	47	51	2
51. Painting—Applying paints	44	51	2
52. Painting—Preparing for painting	43	54	5
53. Cold and sheet metal work—Small construction projects	41	51	8
54. Painting—Paint problems	40	57	3
55. Plumbing—Water systems and sewage	39	59	2
56. Painting—Kinds of paint	38	55	7
57. Cold and sheet metal work—Identification & classification	34	61	5
58. Rope work—Care and selection	29	61	10
59. Lettering and drawing—Draw construction projects	29	52	19
60. Electrical wiring—Electric code	28	55	17
61. Masonry—Building costs	27	68	5
62. Glazing—Glass installation demonstration	26	66	8
63. Masonry—Laying block or brick	24	68	8
64. Masonry—Mortar mixes	24	67	9
65. Lettering and drawing—Simple lettering and drawing	24	52	24
66. Metal lathe—Simple project construction	18	65	17
67. Metal lathe—Parts and operation	14	73	13

Table 3. Instructional areas considered important by the farmers compared to the tentative time allotments suggested by the course of study.

Instructional area and teaching units	Very valuable on the farm in percent	Course of study time allotments hours suggested
Construction projects	96	140
Build and repair farm equipment		
Tractor care and maintenance	95	30
Lubrication, carburetion, ignition and electrical systems, cooling systems, air cleaners, power application, trouble shooting, cost of operation winterizing		
Arc welding	92	30
Principles of arc welding, welding techniques, electrodes, carbon arc torch, construction projects		
Oxyacetylene welding	90	20
Principles of oxy-acetylene welding, welding techniques, construction projects		
Farm machinery	88	50
Care and operation, cost of operation, maintenance and repair, power transmission		
Total hours		270

suggested teaching hours are shown in Table 1.

Table 2 gives a very definite listing of important teaching units. Note the units relating directly to farm machinery and equipment are listed first and units relating to farm building and maintenance and repair were much lower in rank. This points out quite clearly the units which should be given greater time allotments.

How much of the total available time can justifiably be spent in the major instructional areas always seems to be a problem. Tables 3 and 4 which follow point out what farmers think about the important areas in farm mechanics.

Table 3 points out a rather important aspect of the study by considering whether the areas thought to be most important by the vocational

agriculture teachers preparing the course of study were considered most important by the farmers answering the questionnaire. Of the five instructional areas listed in the table, it will be noted that the largest time allotments were given to the areas considered to be most useful on the farm. There were 270 hours of the 400 hours recommended in the farm mechanics course of study in these most important areas.

It is interesting to note from Table 4 that the areas in the highest percentage considered to have no value on the farm, were also given least time allotments. The six major instructional areas were given approximately 33 out of 400 total hours. This points out rather emphatically that farmers would rather spend more time on areas more closely related to keeping the farm machinery in operation and less time on things which do not relate as closely to farm equipment and machinery.

As a result of the questionnaire study, I believe the following conclusions can be made:

1. The cost of buying and maintaining machinery and equipment on most farms is a very large item of expense. The farm mechanics phase of vocational agriculture should take this into consideration in developing a course of study.
2. A survey of complete course of study in Idaho reveals that about 50 percent of the total time available in vocational agriculture training should be in the area of farm mechanics.
3. More than 50 percent of the farmers questioned indicated they did not receive training in masonry, metal lathe, glazing, concrete work, electrical wiring, plumbing, home farm shop, rope work, electric motors, farm leveling and painting. However, all indicated they should be taught in vo-ag shop.
4. The questionnaire indicated that not a single area of instruction should be omitted from the course of study due to lack of value on the farm.
5. The areas of instruction given the greatest number of hours of instruction in the course of study were considered most important by the farmers. These areas were construction projects, tractor care and maintenance, arc welding, oxy-acety-

Table 4. Instructional areas considered least important by farmers compared to the tentative time allotments suggested by the course of study.

Instructional area and teaching units	No value on the farm in percent	Course of study time allotments hours suggested
Lettering and drawing Simple lettering and drawing, draw construction job for shop	22	10
Metal lathe Parts, operation and maintenance, simple project construction	15	5
Glazing Glass installation demonstration	8	2
Masonry Building costs, mortar mixes, laying block or brick	7	8
Rope work Care and selection of rope, rope splices and halters	6	4
Painting Preparation for painting, kinds of paints, applying paints, painting problems	5	4
Total hours		33

lene welding, and farm machinery

6. The areas of instruction suggesting the lower number of hours of instruction in the course of study also were considered least important by the farmers. These areas were lettering and drawing, metal lathe,

glazing, masonry, rope work, and painting.

7. The course of study in farm mechanics prepared by vocational agriculture teachers in Idaho was basically approved by the farmers who knew the problems of vocational agriculture in high school and who

had years of experience in farming.

8. The course of study should give students a well-rounded knowledge of farm mechanics and the many mechanical experiences necessary to successful modern farming. This course of study will also leave each teacher with sufficient freedom to develop a program to meet the needs of the local community.
9. Success in teaching farm mechanics will depend on the constant re-evaluation and revision necessary to keep abreast of the ever-changing farming world.

After this survey had been taken and the results studied, I felt very good. Idaho teachers had prepared a course of study in farm mechanics which apparently appealed to the farmers in the various areas of the State. Adapting it to the various communities and constant re-evaluation will be necessary if the course of study is to remain valuable to the farmers. □



## The Time to Teach Safety Is Now

BURL HUNT, Teacher Education, Kansas State University, Manhattan

Accidents that cripple or kill farm youth are the concern of parents, vo-ag instructors, and other interested groups. Preventable farm accidents are responsible for many permanent injuries and fatalities in the 14 to 19 year age-group. Vo-ag instructors should be aware of the seriousness of this safety problem.

The vo-ag teacher is in a position to effectively teach many facts, habits, attitudes, and skills which could reduce the number of preventable farm accidents. The students are capable of learning them. There can be no doubt that they need to learn them.

Careless and improper use of tractors and other farm machinery is a major source of injury and death on the farm. With the increase in use of tractors and other modern farm machinery, there is a continual

need to make vo-ag students safety conscious.

The tractor is one of the most useful machines of all time if it is operated with skill and care. If not, then it becomes dangerous. In years past, when practically all plowing was done with mules, horses, or oxen, farmers expected the animals to use a little "horse sense." The animals often turned at the end of the row voluntarily, avoided stepping on the corn, and did part of the thinking for the person behind the plow. The tractor depends entirely on the driver to make safe decisions.

Manufacturers design modern farm equipment for safe operation. They include many built-in safety features on tractors; however, it is difficult to build in all the safety guards that are needed for the human factors that

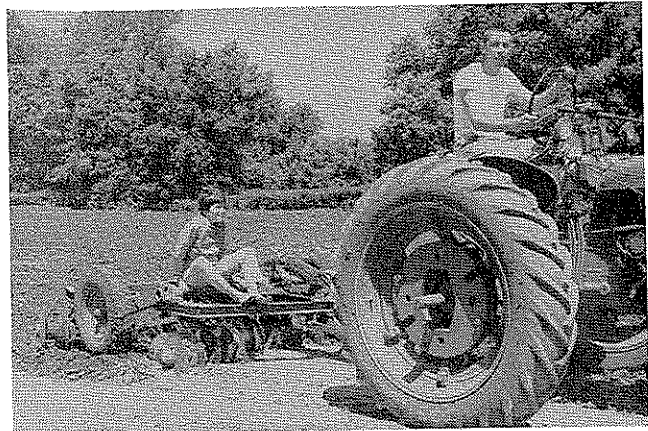
cause accidents. This means that much farm safety must be taught if the human factors that cause accidents are to be decreased or eliminated. Who is better qualified to teach this than the vo-ag teacher, and, what better place is there to teach it than in the vo-ag program?

The National Institute for Farm Safety has suggested six steps for training operators of farm machinery:

1. Make a complete list of the skills needed for safe and efficient operation.
2. Have the learner observe from a safe position while instructor demonstrates.
3. Demonstrate each skill and give explanations of each step.
4. Give the demonstration more than once if the learner has any questions.



Let's hope he is turning around to say: "Get off!"



The price paid for this ride could be — a foot!

5. Have the learner demonstrate each skill and explain the process as he is doing it.
6. Have the learner repeat the demonstration until he has mastered each skill.

The Kansas Bureau of Vital Statistics recorded a total of 55 accidental deaths to Kansas farm residents in 1960. This number includes only those accidental deaths that occurred during the performance of agricultural work. Thirty-four of the 55 deaths were caused by tractors. A look at the percentages reveals that tractors accounted for nearly 62 per cent of the fatalities. Agricultural machinery, other than tractors, was responsible for an additional 14.6 per cent of the Kansas farm fatalities for 1960. Therefore, tractor accidents and accidents involving other farm machinery accounted for more than three-fourths of the fatal "working accidents" to Kansas farm residents last year. These figures and percentages include only the fatal accidents. They do not include those who were injured, crippled, or permanently disabled.

Statistics concerning accidental deaths are depressing; however, they at least bring the need for safety education to the attention of educators.

A vo-ag student should be taught that his chances of escaping injury or death from an overturning tractor are small. By dropping a one-pound weight and a ten-pound weight from the Leaning Tower of Pisa, Galileo discovered that objects of different weight fall at the same rate of speed. This same scientific experiment may be used to illustrate the fact that a tractor operator has very little chance to escape being crushed by a rearing tractor. Studies on time and motion prove that a rearing tractor gives the driver approximately two-fifths of a second to get out of the way before

it flips backward and pins him underneath.

Thus, even if he reacts immediately, the operator has very little chance to beat the heavier object to the ground and have enough time to get in the clear. For that reason, say the safety experts, farmers or other tractor operators should be taught to never get careless or take chances.

Overturning accounts for many tractor accident fatalities. Last year, in Kansas, the following "overturning" accidents were recorded:

Type of Overturn	Number of Deaths
1. Tractor overturned while pulling another vehicle.	3
2. Tractor overturned while driving through ditch.	7
3. Tractor overturned while climbing embankment.	2
4. Tractor overturned, child was riding with father along bank of a pit silo.	1
5. Tractor overturned, circumstances not stated.	13

Careless and improper use of tractors and other farm machinery is not the only source of accidental farm injuries and deaths. There are many other sources of injury and death waiting for an opportunity to take advantage of a careless person.

Accidents in the home are taking an alarming toll of lives among farm families. Home accidents account for about 2,700 deaths annually, or 23 per cent of the total accident mortality, among the farm population of the nation. Hazards in the home become so commonplace that the families become accustomed to them and adjust to them. The hazards, in many instances, are not noticed and removed until a serious injury or death awakens the "safety mechanisms" in the "survivors." Perhaps,

these "safety mechanisms" could be awakened by safety education before the accidents occur.

The most common cause of death and injury in the home is falls. These falls usually occur on steps, make-shift ladders, or in bathrooms. Following falls as killers and cripplers of residents of farm homes are burns, explosions, suffocations, gunshots, and poisonings.

A report compiled by the Traffic and Safety Department of the State of Kansas gives a comprehensive analysis of the Kansas rural motor vehicle accidents for 1960. This report reveals that 445 persons were killed in traffic accidents in Kansas last year. About one third, or 150 of the 445, were killed in automobile accidents on rural roads. Investigating officers found that the major causes of traffic accidents on rural roads were: speeding, failure to yield the right-of-way, following too closely, and driving on the wrong side of the road.

If the present rate of farm accidents continue, an average of 32 of our nation's farm residents will meet death accidentally each day for the next year. In addition to the needless deaths, thousands of farm dwellers will receive disabling injuries in one year.

Thus, it seems appropriate to give the warning, "The Time to Teach Safety Is Now!" □

The only way to regenerate the world is to do the thing which lies nearest us, and not hunt after grand far-fetched ones for ourselves.

—Charles Kingsley

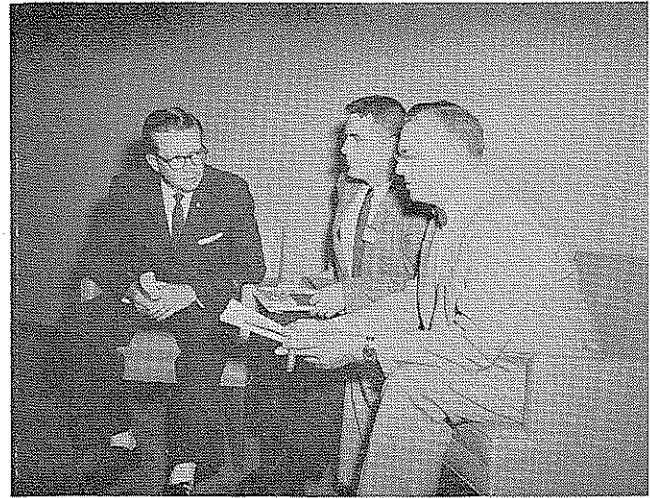
## Stories in Pictures



Take a tip from North Dakota. Last summer new members of the North Dakota Vocational Agriculture Association received a framed copy of the Vocational Agriculture Instructors' Creed from Don Davidson, the Association President at that time. Other associations may want to do the same. In the picture taken during the summer meeting held at NDSU, August, 1961, left to right, the new members were: front row—Carl Roberts, Christian Back, Curtis Teigen, and President Don Davison. Second row—Don Johnsen, Carrol Hanna, William Elliott, Harley Schlichting Third row—Richard Johnson, Maynard Iverson.



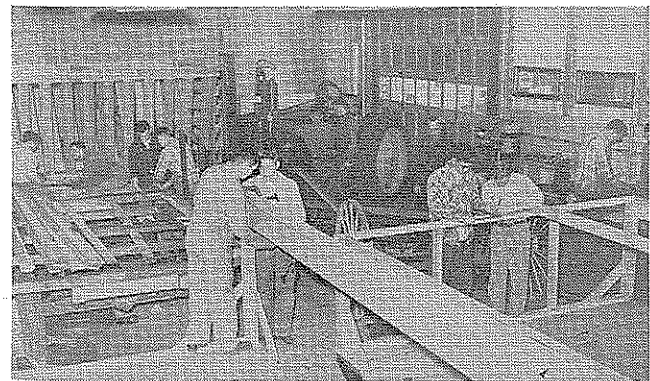
Dr. W. T. Spanton, retiring National FFA Advisor, was presented a volume of letters and a gift by the past National FFA Officers club at the close of the 34th National FFA Convention in Kansas City, October 13, 1961. The presentation was made by Gus R. Douglas (W. Va.) center, and Bob Taylor (Ohio) who served as National President and Vice President respectively in 1946-47. Dr. Spanton became National Advisor in 1941 succeeding the late Dr. J. A. Linke, and retired November 1, 1961.



Pictured while attending the 1961 Nebraska Summer Conference are: (l. to r.) Dr. Duane M. Nielsen, Specialist in Teacher Training and Research, U.S. Office of Education, Agricultural Education Branch; Hamilton Hicks, Jr., d-Con Company; and James Wall, NVATA Executive Secretary. (Picture submitted by Ted D. Ward, vo-ag instructor, Verdigre, Nebr.)



An Award of Merit to the Cooperative G. L. F. Exchange, Inc., from the American Vocational Association is accepted by J. C. Corwith, G. L. F. president, second from right at ceremonies held last August, in New York. Making the presentation is Elliott Johnson, of Phelps, incoming president of the New York State Vocational and Practical Arts Association, representing A. V. A. Looking on, from left, are: R. C. S. Sutliff, Chief Bureau of Agricultural Education, N. Y. State Dept. of Education; E. H. Fallon, center, G. L. F. general manager; and Warren A. Ranney, G. L. F. director of public relations. Submitted by Ernie Nohle.



The farm mechanics shop in the Algona, Iowa, High School is large, but it is usually completely filled with farm mechanics projects in process of completion. This picture is illustrative of most good farm mechanics shops. There is a great amount of organization though to the untrained eye, the opposite seems to be the case. The vo-ag instructor, George Sefrit, is in the center near the door. He has been teaching vocational agriculture over 25 years and is a former president of the Iowa Vocational Agriculture Teachers Association.