

*The*

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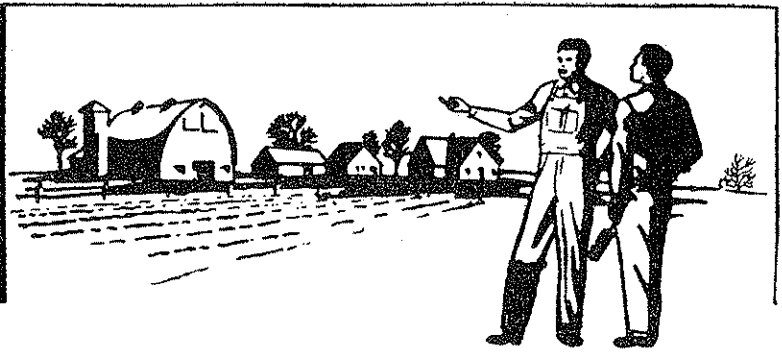
NUMBER 7



● *Picture legend, page 148*

*Featuring—Evaluating the Farm  
Mechanics Program*

# 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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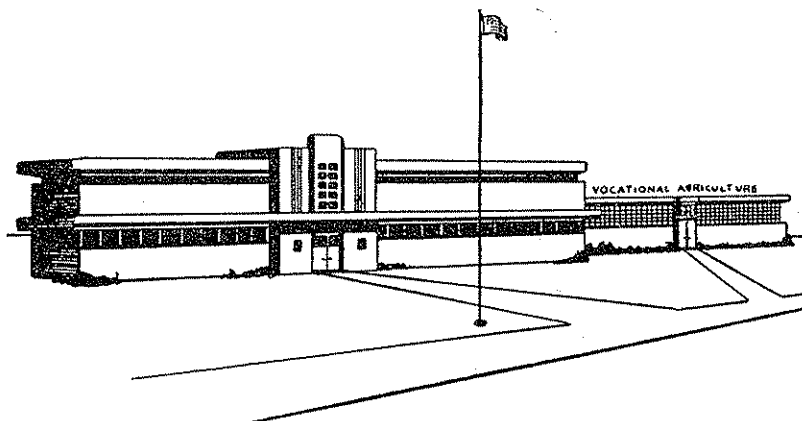
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## Whither Farm Mechanics?

C. V. RODERICK, Teacher Education, U. of Missouri

Farm mechanics has long been recognized as a vital part of course content in vocational agriculture. We have seen many changes in emphases and teaching procedures over the last twenty years. Most states have integrated the farm mechanics program into the course of vocational agriculture rather than teaching it as a separate course.

There is a definite need for good teaching in farm mechanics. What are these needs? What are the objectives for including farm mechanics as a part of the training in vocational agriculture? These questions must be answered before we can determine the kind of farm mechanics program we should have in our local department.

Some teachers' objectives seem to be, "To construct as many articles in the farm shop as possible," and, "To construct 'big' projects." There is nothing wrong with constructing projects and *big* projects, but should this be the real objective since one of the accepted criteria for good objectives is "Objectives should be attainable with the time and facilities that are available"? Some of the large projects constructed in shops take so much time to complete that other more important course content must be deleted.

The objective of constructing *big* projects and "many" articles also encourages the use and necessity for production type equipment in farm shop which the author believes is not justifiable in light of desirable objectives in farm mechanics.

Large projects constructed without previous teaching of basic skills encourages carelessness and poor workmanship because the major objective of the student and teacher is to "make things without regard to quality." Another fallacy of the above objective is that too much emphasis is being placed on construction rather than selection, repair and maintenance of farm equipment.

We frequently try to justify big equipment and big projects in shop because we have big shops. Well, we wanted *big shops* so we could use big equipment and big projects. This argument will only take us in circles and we end up where we started.

The author believes that the pendulum is swinging back from whence it started to the teaching of more basic skills in the farm shop and encouraging the students to do more and more of their production type work on their home farm under guidance of the agriculture teacher during his on-farm instructional visits.

(Continued on page 148)

## From the Editor's Desk . . .

### Values and Farm Mechanics - - -

In this day of increasing emphasis on subjects requiring little or no physical dexterity, it may be well to reflect on some of the values of farm mechanics instruction not easily recognized by persons unfamiliar with the nature of such instruction. It may even be that we have failed to take some of these values into account when planning our own farm mechanics programs. Since values can be defined in so many different ways, the following are given only as illustrations to serve as a starting point for the development of a more comprehensive list.

1. **PRIDE IN ACCOMPLISHMENT**—There is a feeling about doing well something requiring physical as well as mental activity that can be duplicated in no other way. All persons need and should have the opportunity to experience this sense of achievement. The standards set for quality work determine the extent to which pride in achievement can be developed.

2. **SOUND MECHANICAL JUDGMENT**—How-  
ever foolproof the construction of modern machines and structures may be, there are continual malfunctions. It is a great source of satisfaction to be able to solve one's own mechanical problems.

3. **FAMILIARITY WITH TOOLS AND THEIR USES**—The "do it yourself" urge is based on a liking for working with tools as well as on the desire to reduce living costs. Familiarity with tools and their uses can help to satisfy both needs.

4. **APPRECIATION OF ORDER TO ACTIVITY**—Working on machines or structures leads to an appreciation of the fact that there is a proper order in which certain actions should be taken. The results of correct or incorrect order in actions taken can be seen in the physical as well as mental sense.

5. **PATIENCE IN TACKLING PROBLEMS**—Some mechanical jobs require infinite patience as repeated attempts to fit things together fail by invisible fractions of an inch. Patience is a virtue of undeniable value.

6. **APPRECIATION OF PLANNING**—The need for detailed plans before many mechanical tasks can be undertaken leads to an appreciation of how planning can help avoid many problems.

7. **SAFETY CONSCIOUSNESS**—Working with tools and materials helps develop an awareness of hazards which helps make safety appraisal of life situations more automatic.

(Continued on page 148)



### Whither Farm Mechanics?—

The time allocated in the school day for teaching vocational agriculture is becoming less and less. Most states are probably on the single period day for each class. This means that teachers must be highly selective of the course content in all phases of vocational agriculture, including that in farm mechanics.

The teacher must select that which is most significant for the high school student to learn and that which can be taught effectively in the time available. Other content can best be taught to young and adult farmer groups and should be earmarked for these groups.

It is quite evident that many teachers overlook the background and abilities of high school students in formulating their course content in vocational agriculture. Many of their students have had courses in industrial

arts and trade classes, and many have learned basic skills from a skilled parent or relative. This must be recognized in formulating an acceptable curriculum in farm mechanics.

If there is one objective that can be justified in farm mechanics, it might well be, "To teach students the abilities, skills, attitudes, and understandings needed to operate and manage a farming operation." Basic skills and fundamental skill processes must be taught. □

### Values and—

8. APPRECIATION OF FINE TOOLS—Performing mechanical tasks helps one develop an appreciation for the use of fine, well-fitted tools and equipment for any task.

9. MATURITY IN DECISION MAKING—Many decisions are made and acted upon in doing mechanical work with almost immediate knowl-

edge of the correctness of the decision. This leads to the development of maturity of judgment.

The above illustrate some of the values to the development of which farm mechanics instruction contributes heavily. If educational programs are to provide for the complete development of the individual, subjects rich in such value-developing activity must not be overlooked. □

### The Cover Photo

The farm mechanics shop in the Algona, Iowa, High School is excellently lighted. Note the fluorescent lighting overhead and the use of glass tile in the walls on two sides of the shop. Note also that the window area has been raised to a height of about six feet. George W. Sefrit, the vocational agriculture instructor, was very careful in planning this shop in order to have electrical outlets available in all sections of the shop. □

### A study of—

# Farmers' Need for Shop Abilities in Georgia<sup>1</sup>

R. R. HARRIS, Department of Agricultural Engineering, University of Georgia

Many leaders in agriculture today agree that effective farm shop programs in vocational agriculture should include abilities which farmers encounter and think are important for them to perform. The identification and value of such abilities have been the subject of discussion for many years. Even though differences of opinion have existed, leaders in the fields of vocational agriculture and agricultural engineering have had, and continue to have, the problem of determining appropriate content for instructional programs of farm shop.

Recently a study was conducted in Georgia with in-school boys, young-adult, and older-adult farmers to determine (1) the relative value of 138 selected farm shop abilities for each age group and (2) the extent to which these age groups of farmers agree on the value of the abilities. The specific objectives were (1) to determine what farm shop abilities are needed by most farmers, (2) to determine how important farmers

think it is for them to possess these abilities, (3) to determine the relative value of these abilities for the various age groups of farmers, and (4) to determine the level of agreement among the various groups as to the value of these abilities in their business of farming.

The respondents were white, male farmers living in school communities where farm mechanics was a part of the total program of vocational agriculture. They were classified as (1) out-of-school adult farmers and (2) in-school boy farmers. The out-of-school farmers consisted of young-adult farmers who were less than forty-five years of age and older-adult farmers who were forty-five or more years of age. The in-school respondents were farm boys enrolled in classes of vocational agriculture.

A questionnaire consisting of 138 abilities in thirteen sub-areas of farm shop was developed for collecting data from these farmers. Thirteen schools were selected to participate. In each school, boy farmers were chosen at random from the class rolls of eligible boy farmers and adult farmers were identified by the probability area

sampling method. The interview procedure was used to collect data from all farmers.

Of the 408 farmers participating in the study, 156 were boy farmers, 123 were young-adult farmers, and 129 were older-adult farmers. Each respondent was asked (1) to indicate whether or not he had encountered a problem involving each of the shop abilities, and (2) how important he thought it was for him, personally, to possess this ability.

Only the responses from farmers who said they had needed the abilities were used. From the collected data a *relative value* was determined for each ability by relating the *percentage* of farmers needing the ability to the *relative importance* of the ability as expressed by these farmers. On the basis of these values the abilities were classified as "extremely valuable," "very valuable," "moderately valuable," "slightly valuable," and "not valuable." These values were analyzed for each farmer age group and for all groups combined.

### Findings

Some of the most important findings

<sup>1</sup>Roland R. Harris, "A Study of Selected Farm Shop Abilities Needed by In-school Boy, Young-adult, and Older-adult Farmers in Georgia" (unpublished Doctor's dissertation, Michigan State University, East Lansing, 1960) 258 pp.

relating to each of the four objectives were as follows:

1. Of the 138 abilities listed in this study, 104 were needed by 50 per cent or more of the boy farmers, 125 by the young-adult farmers, 116 by the older-adult farmers, and 115 by all farmers.

2. Boy farmers indicated that 8 of the 138 abilities were "extremely important" for them to know how to perform. For young-adult farmers, the number of "extremely important" abilities was 36. Twenty-four abilities were rated "extremely important" for older-adult farmers to possess, while 14 abilities were found to be "extremely important" for the all-farmer group. All of the other abilities, except three, were rated "very important" by each of the different age groups.

3. When the relative values of the abilities were determined by relating the percentage of farmers needing the abilities to the relative importance of the abilities, 22 abilities were found to be "extremely valuable" for the boy farmers, 60 for the young-adult farmers, 52 for the older-adult farmers, and 41 for all farmers. All of the remaining abilities for each of the groups were found to be "very" or "moderately" valuable.

A sub-area value was determined by using all ability values within a given sub-area. Based on these values the ranks of the sub-areas, in descending order, for *all farmers* was (1) woodworking and carpentry, (2) cold metal work, (3) the home farm shop, (4) farm fencing, (5) tool fitting, (6) planning shop projects, (7) farm plumbing, (8) rope and leather work, (9) painting, glazing, and special finishes, (10) hot metal work, (11) concrete and masonry, (12) electric arc and oxy-acetylene welding, and (13) soldering metals.

The 41 abilities found to be "extremely valuable" for *all farmers* as a group are given by sub-areas. The number enclosed in parentheses at the end of each ability is its rank in the total list.

a. Woodworking and Carpentry:

- (1) Select suitable nails, screws, or bolts for a given job. (2)
- (2) Square the ends of a piece of lumber with a square. (4)
- (3) Saw a board with a hand-saw. (5)
- (4) Repair equipment for the farm. (8)
- (5) Lay out and cut an angle on a board. (10)
- (6) Make holes in wood. (12)

- (7) Select suitable hinges, locks, glue, or catches for a given job. (14)
  - (8) Install hinges or locking devices on doors. (16)
  - (9) Determine the kind and grade of lumber or plywood to use for a given job. (18)
  - (10) Repair a small building. (20)
  - (11) Shape and smooth wood to a specific size. (30)
  - (12) Lay out and cut braces. (34)
  - (13) Build a small farm building. (39)
  - (14) Make equipment for the farm. (41)
- b. Cold Metal Work:
- (1) Use wrenches and other metal-working tools correctly. (1)
  - (2) Cut metal with files, hacksaws, cold chisels, or tinners' snips. (14)
  - (3) Remove broken bolts or screws from holes. (17)
  - (4) Fasten pieces of metal together with rivets, metal screws, or bolts. (28)
  - (5) Straighten a bent piece of cold metal. (39)
- c. The Home Farm Shop:
- (1) Decide what kind and amount of hand tools to have for farm shop work. (29)
  - (2) Plan a good storage arrangement for nails, bolts, screws, lumber, and other supplies on the farm. (36)
- d. Farm Fencing:
- (1) Decide what kind of fence to build. (11)
  - (2) Repair a barbed wire fence. (23)
  - (3) Build a barbed wire fence. (24)
  - (4) Decide what kind and size of gates, cattle guards, or stiles to use in fences. (26)
  - (5) Build or repair gates, cattle guards, stiles, walk-throughs, or flood gates in fences. (38)
- e. Tool Fitting:
- (1) Sharpen axes or hatchets. (6)
  - (2) Replace handles in various farm tools. (7)
  - (3) Clean, maintain, and care for hand tools. (9)
  - (4) Sharpen hoes, shovels, or spades. (21)
  - (5) Whet sharp edge tools. (27)

- (6) Sharpen cold chisels. (32.5)
- f. Planning Shop Projects:

- (1) Know the names of materials commonly used in farm buildings and equipment. (14)
- (2) Calculate the cost of a project before it is built or repaired. (22)
- (3) Make a list of all materials needed for a given job. (32.5)

g. Farm Plumbing:

- (1) Protect a water system from freezing. (3)
- (2) Repair a leaky faucet. (30)
- (3) Replace a piece of damaged pipe. (39)

h. Rope and Leather Work

i. Painting, Glazing, and Special Finishes:

- (1) Apply paint with a brush. (19)
- (2) Install glass in a frame, window, or door. (25)

j. Hot Metal Work

k. Concrete and Masonry Work:

- (1) Make good concrete. (36)

l. Electric Arc and Oxy-acetylene Welding

m. Soldering Metals

4. The level of agreement as evidenced by the correlation coefficient between any two farmer groups was very high (significant at the one per cent level) for some of the sub-areas; it was high (significant at the 5 per cent level) for other sub-areas; and it was low (not significant at the 5 per cent level) for still other sub-areas.

With the sub-area classifications being disregarded, the correlation coefficient calculated for each pair of farmer groups for all 138 abilities was found to be significant at the one per cent level.

### Interpretations

The findings of this study warrant the following conclusions and recommendations:

1. Most farmers in each of the age groups need a high proportion of the abilities listed in this study and rate them as "very" or "extremely" important to know.

2. Young-adult farmers need more abilities and rate their importance higher than the other two groups.

3. The relative values of the abilities vary considerably for each of the farmer age groups. A higher percentage of the abilities is more valuable for the young-adult farmers than for either the older-adult or the boy farmers. Similarly, more abilities ap-

pear to have a somewhat higher value for older-adult farmers than for the boy farmers.

4. There are considerable variations among the relative values of the farm shop sub-areas for each of the farmer groups; however, all sub-areas of abilities appear to be "very valuable" for the all-farmer group.

5. There are substantial variations among the relative values of abilities within most sub-areas for each of the farmer groups.

6. Top priority should normally be given to the most valuable sub-areas of this report. Since the ability values varied considerably within the sub-

areas, teachers attempting to meet the most essential needs of trainees should include all high-value abilities in their instructional program—not just the sub-areas rated most valuable.

7. For all abilities as a group a high level of agreement can be expected among the judgments of the farmer groups. Young-adult and older-adult farmers tend to agree more closely than boy and young-adult farmers or boy and older-adult farmers.

8. The level of agreement of judgments among the farmer groups on the value of the various sub-areas is variable.

9. Teachers should be encouraged

to re-examine the content of their instructional farm shop programs in the light of the findings of this study. The all-farmer findings should be used for district and state evaluations.

10. The all-farmer findings should be used to evaluate the present college programs of farm shop for teachers of vocational agriculture.

11. Additional research is needed in the farm shop area of farm mechanics to anticipate the future needs of farmers. Comparable studies need to be made in the farm mechanics phases of Farm Power and Machinery, Farm Structures, Soil and Water Management, and Electric Power and Processing. □

### Increased flexibility for—

## The Modular Farm Shop

HARRY D. HENDERSON<sup>1</sup>

Are you planning a teacher training farm shop? Does your college or university have facilities in which agricultural education equipment can be tested and constructed? Is there opportunity for experimentation with arrangement so that space, time, and motion relationship in vocational agriculture teaching can be studied? If not, here is one suggestion for developing such a shop laboratory. Perhaps the system can be utilized in the planning of high school vocational agriculture shops as well.

In an earlier article ("Space Requirements In A Farm Shop Laboratory," *Agriculture Education Magazine*, January, 1960), the recommended dimensions for operational areas of several common work stations were given. These dimensions were determined from a study of some 209 students performing laboratory tasks in the teacher training farm shop at the Wisconsin State College and Institute of Technology. The recommendations were actually formulated by using standard deviations for minimum and optimum requirements. In order to convert the deviation dimensions into practical standards, the measurements were usually adjusted to the nearest four-inch increment for side-to-side dimensions and to the nearest three-inch increment for depth dimensions.

Close examination of the recommended operational areas (Table I. P,

*Agriculture Education Magazine*, January, 1960) reveals a positive relationship. A side-to-side dimension of 60 inches is recommended for all work stations except the jointer, radial saw, table saw, and machinery repair. All of these four except the radial saw are located in the middle of the floor. The fact that in nine of the 13 stations, approximately 60 inches is recommended indicates that it is a logical length for a basic layout module.

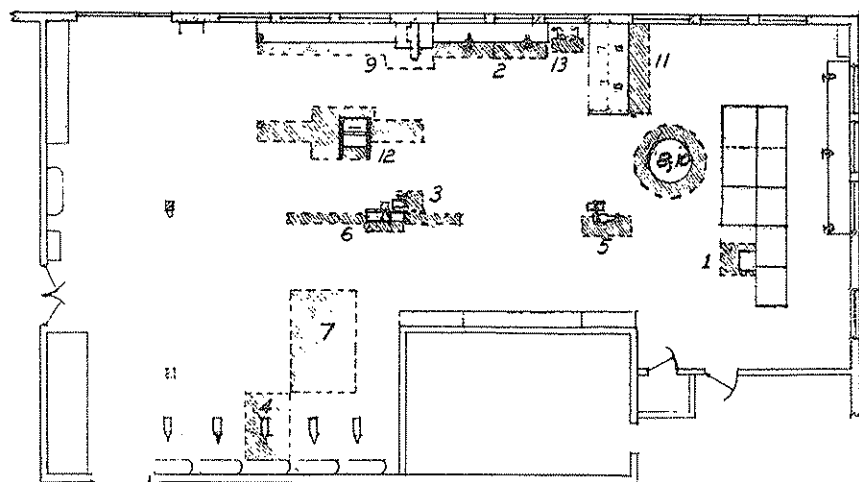
The farm shop laboratory in which the space study was conducted is shown in Figure 1. The work stations

are shaded and numbered. If certain changes were made, the flexibility of this laboratory could be greatly increased.

The shop laboratory could be laid out in a grid plan of 60 inch squares. Work stations could then be located within the squares around the walls of the shop. The radial saw or any other piece of equipment which requires an operational space of more than one square could be allotted as many multiples of 60 inch increments as necessary. Work stations which cannot be placed against a wall could be located in the center of the floor within the 60 inch squares or multiples of the squares. Storage areas, teaching stations, service openings, and traffic aisles could be planned in a similar manner.

The above system of arrangement

FIGURE 1  
FARM SHOP LABORATORY



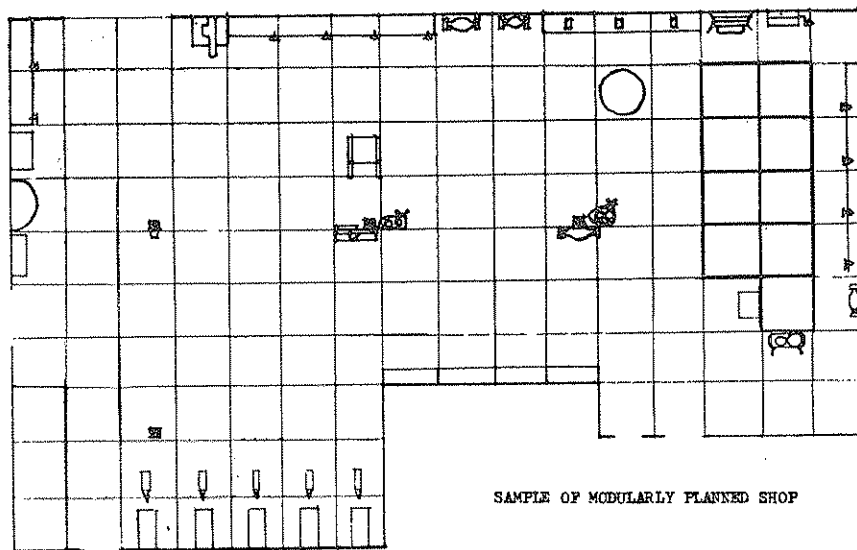
- |                   |                         |
|-------------------|-------------------------|
| 1. Arc Welder     | 7. Machinery Repair     |
| 2. Vise & Bench   | 8. Round Bench          |
| 3. Drill Press    | 9. Radial Saw           |
| 4. Forge          | 10. Oxyacetylene Welder |
| 5. Crinder-buffer | 11. Soldering bench     |
| 6. Jointer        | 12. Table Saw           |
|                   | 13. Tool Grinder        |

<sup>1</sup>Doctor Henderson is Professor, in charge of agricultural engineering training, Department of Agriculture, Wisconsin State College and Institute of Technology.

is similar to the modular system used in the building trade. An example of a "modularly" arranged farm shop laboratory is shown in Figure 2. The proposed shop is actually an adaptation of the one shown in Figure 1.

The modular plan would have several advantages over the conventional method of arrangement in a teacher training shop. Work stations could be interchanged so that different arrangements could be tested for convenience, safety, supervision, and time utilization. The electrical circuits could be installed so that one outlet was available for each module or 60 inch section. Storage cabinets built to fit the modular system could be moved to match changes in work station locations. Doorways and other openings could be located within the grid pattern so that wall space would not be wasted.

The modular system of layout meets the two-fold criteria for all modern building planning: flexibility and ex-



SAMPLE OF MODULARLY PLANNED SHOP

Figure 2

pansibility. Flexibility is provided by the complete interchange of work stations and other facilities that is possible while future expansion could be planned easily in terms of specific work stations needed rather than in

terms of the general area to be added. These features should simplify the work of the architect, increase the useable life of the laboratory, and provide the teacher with more possibilities to enrich his offerings. □

What should be emphasized in—

# Plow and Mower Phases of Farm Mechanics

RALPH R. BENTLEY and JAMES P. CLOUSE, Teacher Education, Purdue University

What activities concerning the maintenance and repair of the plow and mower should be included in the farm mechanics course of study? Should the content of the course of study be based upon those activities which farmers perform for themselves or upon the beliefs of implement dealers, teachers of vocational agriculture and/or farm mechanics specialists? This article does not provide final or complete answers to these questions; however, it does report the findings of a carefully conducted research study which has definite implications regarding the breaking plow and mower phases of the farm mechanics course of study.

The basic data for this study were obtained by means of breaking plow and mower inventory forms which were completed by 232 farmers, 89 implement dealers, 46 teachers of vocational agriculture and 68 farm mechanics specialists. The farmers, who were selected at random in 48 communities, completed the inventory forms by indicating the extent to

which they performed each of 30 breaking plow and 28 mower activities for themselves. Implement dealers, teachers of vocational agriculture, and farm mechanics specialists completed inventory forms by indicating the extent to which they believed that farmers should perform each of the breaking plow and mower activities

for themselves. The implement dealers and teachers of agriculture lived and worked in the same communities from which the farmers were selected, while the farm mechanics specialists group were distributed nation-wide. The specialists group consisted of professional agricultural engineers and teacher-educators having special farm

TABLE I

PLOW AND MOWER ACTIVITIES PERFORMED BY FARMERS AND THE BELIEFS OF DEALERS, TEACHERS AND FARM MECHANICS SPECIALISTS REGARDING THE ACTIVITIES FARMERS SHOULD PERFORM

Activity	Activities Performed by Farmers			Significant Differences† Between the Activities of Farmers and the Beliefs of		
	A <sup>1</sup>	S <sup>1</sup>	R <sup>1</sup>	D <sup>2</sup>	T <sup>2</sup>	S <sup>2</sup>
<b>A. Plow:</b>						
1. Lubricate the plow.	97	2	1			
2. Prepare the plow for storage.	97	3	0		(b)*	
3. Hitch the plow.	95	2	3			
4. Replace a plow share.	92	5	3			
5. Adjust the depth of the coulter (cutter).	92	4	4		(a)*	(a)*
6. Set the coulter (cutter in the proper location).	91	4	4		(a)*	(a)*
7. Level a plow.	85	9	5			(a)*

(Table I Continued)—

Activity	Activities Performed by Farmers			Significant Differences† Between the Activities of Farmers and the Beliefs of		
	A <sup>1</sup>	S <sup>1</sup>	R <sup>1</sup>	D <sup>2</sup>	T <sup>2</sup>	S <sup>2</sup>
8. Clean a rusted plow moldboard and share, coulter (cutter) or jointer.	85	6	9		(a)*	(a)*
9. Set the jointer in the proper location.	80	7	10	(a)*	(a)*	(a)*
10. Adjust the safety release hitch.	80	7	13		(a)*	(a)*
11. Check the plow bottoms for proper alignment (lining up properly).	79	10	10	(b)*	(a)*	(a)*
12. Adjust the rear furrow wheel for heel clearance.	78	7	15	(a)*	(a)*	(a)*
13. Replace a coulter (cutter) part.	78	12	10		(a)*	(a)*
14. Replace a landside.	77	6	16	(a)*	(a)*	(a)*
15. Adjust the rear furrow wheel for landside clearance.	77	8	15		(a)*	(a)*
16. Check the plow for a sprung or bent beam.	75	12	13	(b)*	(a)*	(a)*
17. Replace a slip heel.	74	8	18	(a)*	(a)*	(a)*
18. Adjust the land suck of a plow.	74	10	16	(b)*	(a)*	(a)*
19. Adjust the balance springs.	74	11	15	(a)*	(a)*	(a)*
20. Adjust the bottom suck of a plow.	72	12	16		(a)*	(a)*
21. Replace a moldboard.	70	8	22	(a)*	(a)*	(a)*
22. Adjust or replace wheel bearings.	67	11	22	(a)*	(a)*	(a)*
23. Replace parts in the mechanical lift of a plow.	66	9	24	(b)*	(a)*	(a)*
24. Replace a jointer share (point).	64	10	22	(a)*	(a)*	(a)*
25. Attach a trash covering rod or wire.	57	13	30	(a)*	(a)*	(a)*
26. Replace a sprung or bent beam.	46	10	44	(b)*	(a)*	(a)*
27. Sharpen the coulter (cutter).	43	16	41	(a)*	(a)*	(a)*
28. Sharpen the jointer share (point).	29	13	55	(a)*	(a)*	(a)*
29. Sharpen a steel plow share (point).	13	4	83		(a)*	(a)*
30. Sharpen a cast iron plow share (point).	10	4	85	(a)*	(a)*	(a)*
<b>B. Mower:</b>						
1. Lubricate the mower.	98	2	0			
2. Adjust for height of cut.	95	2	3			
3. Tighten all bolts and parts on the cutter bar.	92	6	2			(a)*
4. Adjust the cutter bar for level operation.	90	5	5			(a)*
5. Replace the sections.	88	9	3	(b)*		(a)*
6. Adjust knife hold-down clips.	85	9	6		(a)*	(a)*
7. Adjust the cutter bar safety release.	83	10	7		(a)*	(a)*
8. Align (line up) the guards.	82	10	8		(a)*	(a)*
9. Set the grass board and stick.	82	7	10		(a)*	(a)*
10. Adjust the pitman.	82	7	11		(a)*	(a)*
11. Replace a knife head guide.	79	13	8	(b)*	(a)*	(a)*
12. Adjust the lifting spring and lifting linkage.	79	10	11		(a)*	(a)*
13. Replace a pitman rod.	78	8	13	(a)*	(a)*	(a)*
14. Adjust the slip clutch.	75	9	15	(a)*	(a)*	(a)*
15. Adjust wearing plates.	76	18	6		(a)*	(a)*
16. Replace wearing plates.	75	17	8		(a)*	(a)*
17. Replace a knifehead.	74	10	15	(b)*	(a)*	(a)*
18. Adjust for lead.	72	11	15		(a)*	(a)*
19. Adjust the drive belt on a belt driven mower.	69	6	21	(a)*	(a)*	(a)*
20. Replace the pitman shaft bearing or bushing.	69	6	24	(b)*	(a)*	(a)*
21. Replace ledger plates on the guard.	66	14	20	(b)*	(a)*	(a)*
22. Adjust for register.	66	11	21		(a)*	(a)*
23. Sharpen the knife.	62	13	25	(b)*	(a)*	(a)*
24. Adjust the stop on the hydraulic cylinder.	62	7	27	(a)*	(a)*	(a)*
25. Adjust the tension on the drive chain.	60	9	27	(a)*	(a)*	(a)*
26. Adjust the drive shaft bearings.	56	10	32	(b)*	(a)*	(a)*
27. Sharpen the guard points.	50	14	36	(a)*	(a)*	(a)*
28. Replace a flywheel wrist pin.	49	11	38	(b)*	(a)*	(a)*

A<sup>1</sup> = Always plus Usually. S<sup>1</sup> = Sometimes. R<sup>1</sup> = Rarely plus Never.

D<sup>2</sup> = Dealers. T<sup>2</sup> = Teachers. S<sup>2</sup> = Specialists.

†An (a) prefixing the (\*) indicates that this group believes farmers should perform the activity more frequently than they do. A (b) prefix indicates this group believes farmers should perform the activity less frequently. All significant differences are at the .01 level.

mechanics interests and responsibilities.

Percentages were computed to determine the proportion of farmers who indicated that they *always or usually, sometimes, or rarely or never* performed each of the breaking plow and mower activities for themselves. Likewise, percentages were computed to determine the proportion of implement dealers, teachers of vocational agriculture and farm mechanics specialists who indicated that they believed farmers should *always or usually, sometimes, or rarely or never* perform each of the breaking plow and mower activities for themselves.

The Arcsin Transformation Technique was used to determine whether there were significant differences between the indicated activities of farmers and the expressed beliefs of each of the other three groups of respondents.

#### Findings

The percentages shown in Part "A" of Table I indicate that more than fifty per cent of the farmers *always or usually* performed 25 of the 30 breaking plow activities for themselves. The activities *always or usually* performed by less than fifty per cent of the farmers were: "replace a sprung or bent beam," "sharpen the coulter," "sharpen the jointer share," "sharpen a steel plow share," and "sharpen a cast iron plow share."

The significant differences between the activities of farmers and the beliefs of dealers, teachers, and specialists and the direction of these differences are also shown in Part "A" of Table I. It will be noted that one or more significant differences were found for 27 of the 30 breaking plow activities and that for 15 of the activities, the beliefs of the three groups differed significantly with the indicated activities of farmers.

The dealers, teachers, and specialists were in agreement that farmers should perform twelve of the fifteen activities more frequently for themselves while, in the other three instances, the dealers believed that farmers should perform the activities less frequently.

The percentages shown in Part "B" of Table I show that more than fifty per cent of the farmers *always or usually* performed all but one of the 28 mower activities for themselves. However, activity No. 28, "replace a flywheel wrist pin" was *always or usually* performed by 49 per cent of the farmers.



The significant differences between the activities of farmers and the beliefs of dealers, teachers, and specialists and the direction of these differences may be observed in Part "B" of Table I. For 26 of the 28 activities, one or more significant differences were found. In 13 instances, the beliefs of all three groups differed significantly with the indicated activities of farmers, and were in agreement in believing that farmers should perform six of the thirteen activities more frequently.

In order to summarize more clearly the distribution of the significant differences between the indicated activities of farmers and the expressed beliefs of dealers, teachers and specialists, Table II was prepared.

Table II shows the number of breaking plow and mower activities and the number of significant differences when the indicated activities of farmers were compared with the expressed beliefs of dealers, teachers, and specialists.

When the beliefs of dealers regarding plow and mower activities were compared with the indicated activities of farmers, 32 significant differences were found. In 18 instances, the dealers believed that farmers should perform the activity more frequently, and in 14 instances, less frequently.

Forty-five significant differences for teachers and 52 for specialists were found when their beliefs were compared with the indicated plow and mower activities of farmers. In all instances where significant differ-

TABLE II  
DISTRIBUTION OF SIGNIFICANT DIFFERENCES BETWEEN FARMER ACTIVITIES AND THE BELIEFS OF DEALERS, TEACHERS AND SPECIALISTS

Activity Area	Number of Activities	Number of Significant Differences When Farmers' Activities Are Compared with Beliefs of Dealers, Teachers and Specialists						
		Dealer		Teacher		Specialist		None
		A <sup>1</sup>	B <sup>2</sup>	A <sup>1</sup>	B <sup>2</sup>	A <sup>1</sup>	B <sup>2</sup>	
Plow	30	12	6	22	0	26	0	3
Mower	28	6	8	23	0	26	0	2
Total	58	18	14	45	0	52	0	5

1. Number of activities which the group believes farmers should perform *more frequently*.
2. Number of activities which the group believes farmers should perform *less frequently*.

ences were found, teachers and specialists indicated that they believed farmers should perform the activity more often.

#### Summary and Implications

1. If the farm mechanics course of study was to be based upon the plow and mower activities performed by fifty per cent or more of the farmers, it would include all but four of the plow and one of the mower activities.
2. A comparison of the expressed beliefs of dealers, teachers and specialists revealed that dealer beliefs agreed more closely with the indicated activities of farmers than did the beliefs of either teachers or specialists. This would seem to imply that dealers were possibly more aware of the plow and mower repair and maintenance activ-

ities of farmers than were the teachers and specialists.

3. The results of this study show that teachers and specialists believe farmers should be performing all of the plow and mower activities more frequently than they are now doing. This would suggest that a course of study based upon their beliefs would include all of the plow and mower activities.
4. When the beliefs of dealers were compared with the indicated plow and mower activities of farmers, it was found that the dealers believed that farmers should perform 14 plow and mower activities less frequently than they now do. This would suggest that careful study and consideration should be given these activities to determine if they should be included in the course of study. □

### A rating scale to help promote—

## Better On-Farm Service Centers

JOSEPH D. RYBURN, Graduate Assistant, Agr. Educ., Penn. State U.



Joseph D. Ryburn

Because of the growing interest in farm mechanization and the rise in capital needed for farm equipment on modern farms, there is a very noticeable increase in the attention being

paid to developing better facilities for maintaining and repairing this equipment. It is not unusual for a farmer to have an investment in farm equipment and machinery totaling \$30,000 or more. The number of machines on farms has been increasing steadily in the past ten years. Farmers, both young and old, are attending classes in vocational agriculture and are learning how to repair and care for their equipment. This need for more

shop work on the farm has had a direct effect upon the demand by farmers and teachers of vocational agriculture for more information regarding the establishment of adequate on-farm shops or service centers. Both farmers and teachers want to know what qualities and specifications a service center should have in order to be considered adequate. To discover what these qualities might be, a study was undertaken by the writer during the past year as a part of his graduate program in agricultural education at Penn State.

A rating scale was developed and used in a survey of ninety on-farm shops or service centers on farms widely distributed throughout Pennsylvania. Much of the information was secured through the cooperation of the teachers of vocational agricul-

## FARM SHOP (SERVICE CENTER) RATING SCALE (Revised)

For teachers of vocational agriculture to help farmers improve their shops.  
Circle one item on each line which most nearly describes this shop.

Line scale value	More than adequate		Adequate	Less than adequate	
	5	4	3	2	1
<b>SHOP SIZE</b>					
Length in feet	60	50	40	30	20
Width in feet	40	35	30	25	20
Height in ft. (Eaves)	12	11	10	9	8
Large door width ft.	14	13	12	11	10
Clear floor space	15'x30'	12'x30'	12'x25'	12'x20'	10'x15'
Window area (sq. ft.)	240	180	120	60	24
<b>LIGHT AND POWER</b>					
Number of lights	8	6	4	3	2
Total wattage	800	600	400	300	200
Elec. outlets 110v	10	8	6	4	2
Elec. outlets 220v	5	4	3	2	1
<b>TYPE OF CONSTRUCTION</b>					
Floor material	Concrete & drain, conc. slab outside	Concrete with drain	Concrete	Packed stone or cinders	Packed clay
Wall material	All Steel	Block and steel	Block or wood frame	Frame (fair)	Frame (poor)
Roof type	Steel truss Metal cover	Wood truss Metal cover	Wood truss Comp. cover	Wood gable Comp. cover	Wood shed Comp. cover
<b>CONVENIENCE FACILITIES</b>					
Plumbing	Complete plumbing	Hot, cold & drain	Cold tap & drain	Drain only	Cold tap only
Heating	Hot water or steam	Hot air blower	Coal or gas stove	Open fireplace	None
Ventilating	Ventilator system	Window fans	Doors & windows	Doors only	No control

## FARM SHOP (SERVICE CENTER) RATING SCALE (Back Page)

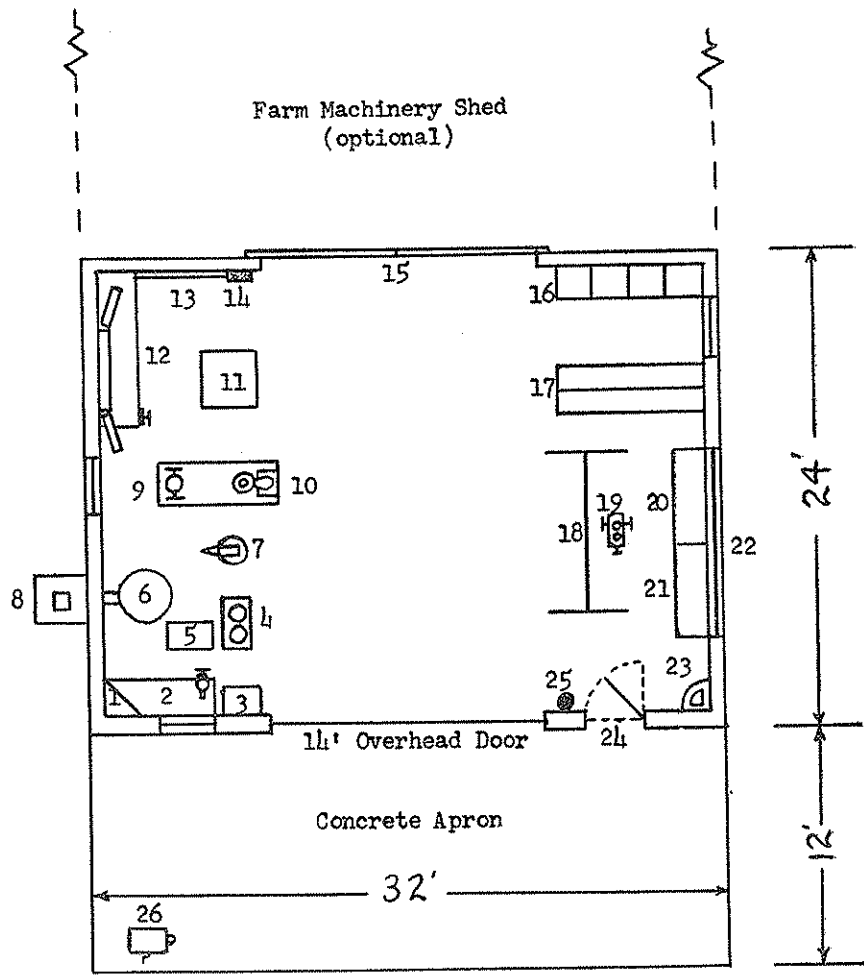
Mark (X) in front of each condition present. Circle total on line.

LOCATION	5	4	3	2	1
( ) Near main flow of traffic.					
( ) Convenient to but at least 50' away from other buildings.					
( ) At least 50' clearance in front of door.					
( ) Near electric service and water lines.					
( ) Protected from winds—faces east or south.					
<b>WORK AND STORAGE AREA</b>	5	4	3	2	1
(for each of these items)					
( ) Woodworking equipment.					
( ) Metalworking equipment.					
( ) Machinery and tractor servicing.					
( ) Welding equipment.					
( ) Painting facilities.					
<b>SUPPLY STORAGE FACILITIES</b>	5	4	3	2	1
( ) Floor racks in shop for <i>short</i> pieces of lumber and metal.					
( ) Overhead storage (floored) for <i>long</i> pieces of lumber and metal. (May be in either the shop or machine storage part.)					
( ) Labeled bins for nails, screws, bolts, rivets, etc.					
( ) Labeled bins for repair parts and replacement items.					
( ) Space for systematic storage of instructions and service manuals.					
<b>SHOP SAFETY FEATURES</b>	5	4	3	2	1
( ) Uses safety color scheme.					
( ) Uses guards, goggles, shields, etc.					
( ) Tools used and stored in safe manner.					
( ) Floor kept free of trash, oil, grease, etc.					
( ) All fire safety rules followed.					
<b>SHOP ACCESSORIES</b>	5	4	3	2	1
( ) Telephone ( ) Office desk ( ) Record file ( ) Chalkboard					
( ) Radio or TV					

ture. Two sets of survey forms were distributed to each teacher. One set was used to collect information about a farm service center which both the teacher and the farmer considered adequate for the needs of that particular farm. The second set of forms was used to collect information about a farm service center which the teacher and the farmer considered inadequate for that particular farm, and where the farmer was planning to develop a more adequate service center in the near future. Each teacher surveyed these two types of shop situations at his convenience as he visited farms in his school area.

After tabulating the data, comparisons were made between the characteristics of the shops in the two groups. It was found that the rating scale gave an "adequate" rating on the average of the shops which the teacher and the farmer had considered adequate for those farms. In the case of the shops which were considered "inadequate," the rating scale gave a score of less than adequate. When the scores from the rating scale were compared for each division of the scale, it was found that certain revisions were necessary. These revisions were made and the revised form of the rating scale is shown herewith. Most farmers agreed that the descriptive items on the reverse side of the scale were desirable. For this reason this part of the scale was left without change.

Insofar as the data were accurate and the farms surveyed were typical of Pennsylvania farms, certain characteristics may be said to be associated with farms and farmers having adequate shops. The farmers who had adequate shops averaged 3.3 years older, owned 22 more acres, rented six fewer acres, had two years longer tenure on the farm, and had about the same amount of schooling. Farmers who had adequate shops averaged \$18,716 invested in farm machinery and \$1,064 invested in shop equipment. Farmers who had inadequate shops, but who were planning for better shops, averaged \$14,167 invested in farm machinery and \$586 invested in shop equipment.



FARM SERVICE CENTER

(Possible Plan for a Medium Size Farm)

- |   |                               |
|---|-------------------------------|
| 1. Corner cupboard                          | 14. First-aid kit             |
| 2. Bench, metal work                        | 15. Two sliding doors         |
| 3. Electric welder                          | 16. Long handled tool storage |
| 4. Gas welder (portable)                    | 17. Back-to-back parts bins   |
| 5. Weld table (portable)                    | 18. Portable hoist            |
| 6. Stove                                    | 19. Portable air compressor   |
| 7. Anvil                                    | 20. Hardware storage          |
| 8. Chimney                                  | 21. Paint and oil storage     |
| 9. Bench grinder                            | 22. High windows              |
| 10. Drill press                             | 23. Wash bowl and water hose  |
| 11. Table saw                               | 24. Small door                |
| 12. Wood work bench<br>(tool cabinet above) | 25. Fire extinguisher         |
| 13. Chalkboard                              | 26. Fuel pump                 |

In the case of the farmers having inadequate shops, 93% said their shops were not big enough and 67% said their shops were unsuitable for the kind of work done.

The rating scale was revised on the basis of the data secured from the survey to make the standards appropriate for adequate farm service

centers and to make it more convenient for students and teachers to use. It is believed that the rating scale can be used both as an evaluating device and as a teaching device by teachers of vocational agriculture in promoting the establishment of better on-farm service centers on the farms of their students. □

FUTURE THEMES

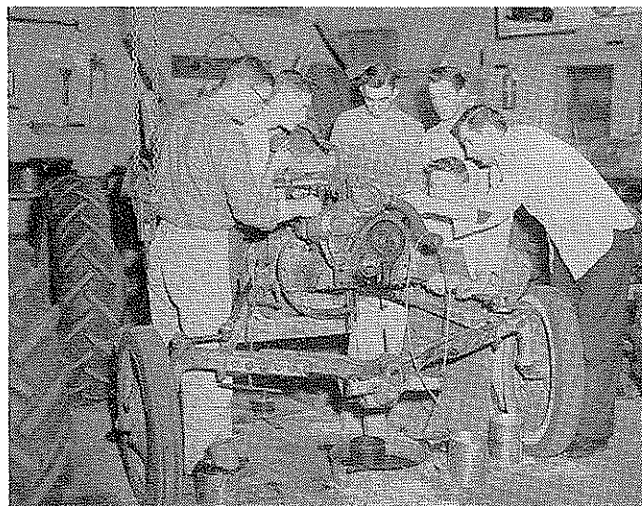
February—Relationships Among Agricultural Education Agencies

March—A Modern Philosophy for the FFA

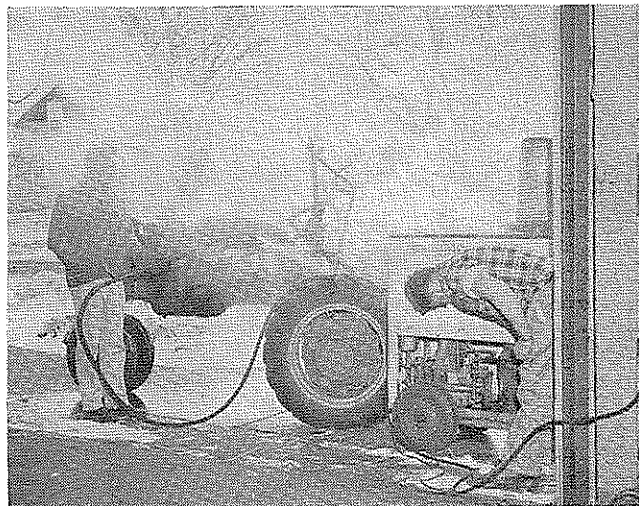
April—Guidance for Students in Vocational Agriculture

May—Summer Programs of Vocational Agriculture Teachers

June—Informational Programs about Vocational Education in Agriculture



Overhauling can be speeded up and painting is a lot faster with a grease free tractor.



Vo-ag boys steaming their tractor before working on it in the shop. It takes about two hours to steam a tractor.

### Use steam cleaner for—

## Improving Instruction in Farm Machinery

CHARLES SALOUTOS, Vo-Ag Instructor, Oconto Falls, Wisc.



Charles Saloutos

Every time a group of agriculture teachers get together, they usually talk a little shop. But even more, when you visit their shops you try to get several good ideas for your own shop improvement.

One of the most valuable pieces of equipment for a shop is the steam cleaner. It has not only improved the teaching of farm machinery, but it has increased the work done in the shop.

### Facilities Must Be Adequate

Not too long ago the farm mechanics shop was thought to be adequately equipped if it had a good supply of hand tools. At the present time we must be thinking in terms of portable tools and equipment to get the work done easier and faster.

To illustrate this point, I can't help but feel that the steam cleaner is the portable piece of machinery for the shop. Before the Board of Education bought the steam cleaner, the student had to spend hours cleaning up the equipment before they could really get at the job they wanted to do. It meant that the students didn't get much repair work done during an hour. It was first a cleaning-by-hand job.

Now since we have the steam cleaner, the first thing a student does is to clean off his piece of farm machinery before any repair work is started. It sure makes it easier for the boys to work on. They don't get themselves plus the tools all greased up during their work.

It puts the shop time to better use and not so much time is wasted in cleaning machinery by hand. Since we are always trying to cut down on the long hours of hard work in agriculture, it is a good step toward bettering your farm machinery units.

When a boy takes a piece of farm machinery home that has been repaired and painted, it really gets the dads to thinking of your high school agriculture shop. To do a good job of painting, you must first get it good and clean so that the paint will stay on.

### A Stimulus to All the Students

When you get a couple of boys to get machinery in the shop and start working on it, the rest of the class will follow. They see that there isn't much dirty work for school time and it's a lot easier to keep themselves clean.

Last year in our tractor maintenance unit, each boy was required to bring in one tractor to work on. We would check the tractor over for general maintenance and paint it. After you get a few tractors going out of your

shop looking like new again, you don't have any problem of getting shop work completed on time.

### Importance of Organization

Planning your work and working your plan is the way to get something done. Have your students work in small groups so that they can get more accomplished. Keep the same groups all the time you are in the shop. By doing this, the student will work on his partner's job harder because he will want the same work back from him. Don't let more than one from a group bring in machinery to work on at a time. Make sure the boys make a list of all the parts and paint they will need for their jobs.

### How the Steam Cleaner Works

The steam cleaner is safer than many of the power tools. After the students have had illustrations on it, it is very easy to operate. The first thing that you do after you have the water turned on and the pump running, is to start your fire. The cleaner will burn a mixture of fuels or just one fuel alone. We burn fuel oil in ours. There is no strong danger of it exploding when operated correctly. When there is clear smoke, you have the right mixture. The detergent we use for a cleaner, which is made by the Beam Chemical Co., is not a caustic substance so it is safe in case some of the water splashes back on you. It has an operating pressure of



90 to 120 pounds. That is good enough for any grease on your machinery. If you don't have a water outlet near your cleaning area, you

should hose your water overhead so that no other machinery can roll on it and shut your water supply off.

The steam cleaner is the best piece

of equipment we have in our shop for getting something done and looking like new again. It is really a *public relations* machine and a good one. □

## Teachers Evaluate Farm Mechanics Plans

BENTON K. BRISTOL,  
Teacher Education, Pennsylvania State U.



Benton K. Bristol

Many farm mechanics plans are available for the use of students and teachers of vocational agriculture. Commercial and educational organizations are producing drawings, sketches, diagrams, and other graphic representations in ever-increasing numbers.

Since there are wide differences in the quality and usefulness of the plans, some method of evaluating them would appear to be helpful to prospective users. Organizations interested in preparing plans for use in high school student and young farmer classes would like to know which project plans are preferred by teachers.

For a number of years the Agricultural Education and Agricultural Engineering Departments of The Pennsylvania State University have cooperated in producing plans for

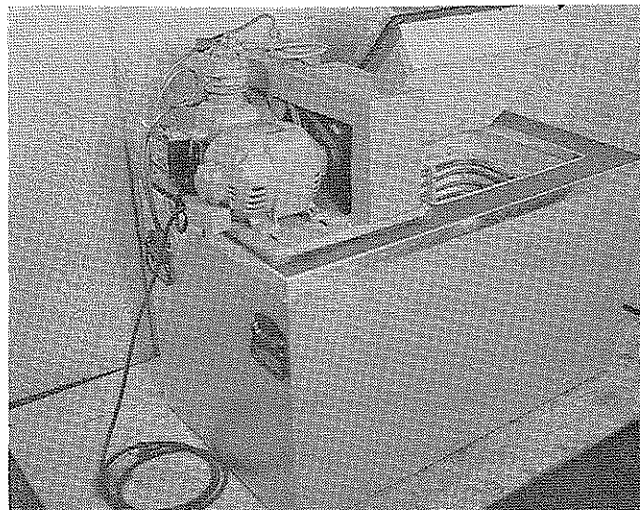


Poultry Picking Machine

educational use. Other departments at the University have furnished similar aids for use by vocational agriculture departments. Commercial organizations have provided additional helps.

Thirty-two representative plans (both up-to-date and out-of-print ones) were shown to thirteen teachers of vocational agriculture in one of a series of district meetings. Each teacher was asked to rate each plan according to the following system: A—have used and will use again; B—have used and will not use again; C—have never used but plan to; D—have never used and do not intend to; E—have never seen but may use; and F—have never seen and doubt I'll use. A scale based on a perfect score of 39 was used to give a weighted value to each plan according to the way it was classified by the teachers.

The titles of the 32 plans rated were: Spring Trip for a Plow Trip-Rope, Concrete Loading Ramp, Masonry Loading Ramp, Wooden Loading Ramp, Chicken Barbeque Grill, Egg Washer, Poultry Scalding Vat, Poultry Picking Machine, Assembled-In-Place Freezer, Electric Brooder for Chicks, Heavy Duty Portable Tool Panel and Work Station, Feed Cart, Device for Checking Accuracy of Rafter Cutting, Portable Waste Can and Broom Rack, Adjustable Farm Machinery Rest, Welding Table and Screen, Folding Picnic Table, Farm Service Center, Homemade Chemical Weed Control Sprayer, Welding Table (with wheels), Cabinet for Filing Charts, Anvil Base, Adjustable Off-Bench Stand, Feed Scoop, Funnel, Door



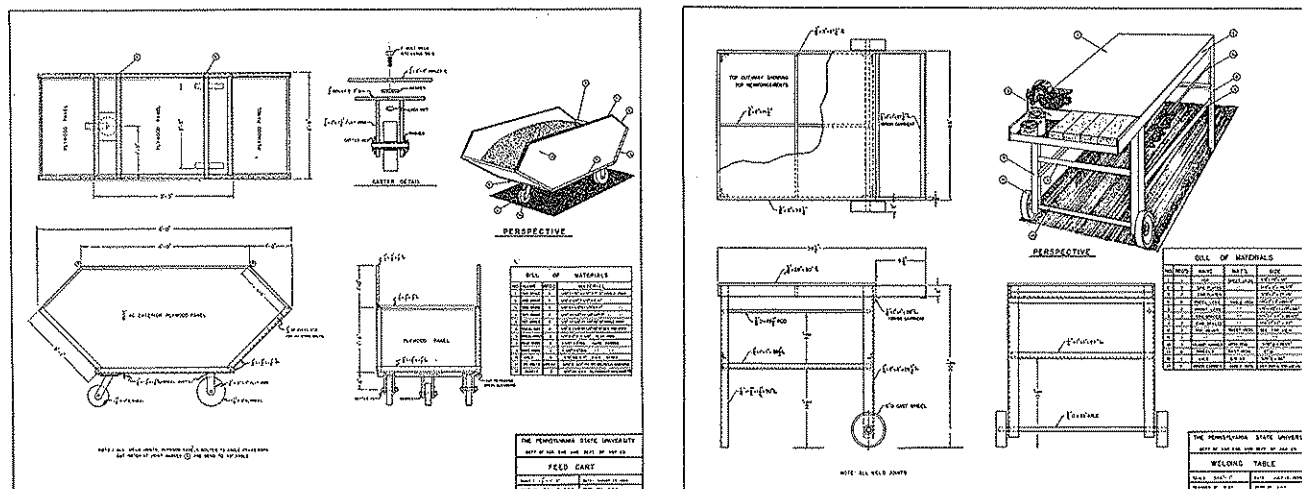
Assembled-In-Place Freezer

Latch, Step Ladder, Heavy Duty Saw Horse, Dust Pan, Coal Bin, Tool Cabinet, and Forge Shovel.

The top ten plans and their weighted scores were: Feed Cart, 34; Feed Scoop, 32; Welding Table (with wheels), 28; Chicken Barbeque Grill, 26; Heavy Duty Portable Tool Panel and Work Station, 17; Farm Service Center, 17; Adjustable Off-Bench Stand, 16; Adjustable Farm Machinery Rest, 15; Folding Picnic Table, 15; and Tool Cabinet, 15. The bottom ten plans and their weighted scores were: Wooden Loading Ramp, minus 3; Anvil Base, minus 5; Poultry Picking Machine, minus 6; Egg Washer, minus 6; Coal Bin, minus 6; Device for Checking Accuracy of Rafter Cutting, minus 7; Poultry Scalding Vat, minus 9; Dust Pan, minus 11; Assembled-In-Place Freezer, minus 17; and Cabinet for Filing Charts, minus 18.

Seven of the thirteen teachers had the following comments to make concerning the 32 plans, as well as "plans in general":

- (1) Plans should be designed for economy of cut from available sized materials.
- (2) Feel that wheels should be on opposite end of welding table.  
Need air compressor plans.  
Silage cart plan is really useful and adaptable.
- (3) Tool cabinet—excellent for home farm shop and school.



Coal bin—variation used for shavings.

Funnel—excellent skill project. Adjustable bench stand—base not heavy enough.

Cabinet for filing charts—charts may get in bottom and be difficult to remove. Made one and dislike it very much.

Farm service center—use as a guide, never in its entirety.

Folding picnic table—not solid enough.

(4) Wooden loading ramp—not durable enough—too much maintenance.

Assembled-in-place freezer—not a desirable project for the farm shop.

Heavy duty portable tool panel and work station—good for farm shop, but no good for school shop.

Adjustable farm machinery rest—threads too slow.

Welding table and screen—base for welding table too small.

Welding table (with wheels)—wheels on wrong end.

Cabinet for filing charts—no good.

Anvil base—cement no good for base.

Adjustable off-bench stand—base too small.

Funnel—top edge should be a finished edge.

(5) I believe that some of the ideas are good but I feel some of the plans are outdated for our uses today.

(6) Plan for bulk feed box needed.

(7) Masonry loading ramp—provides more opportunity to learn a skill not easy to come by.

Assembled-in-place freezer—cheaper to buy than to make.

Feed cart—too small and light.

Welding table (with wheels)

—better than one with portable welding screen because it is more substantial.

Cabinet for filing charts—would probably end up just being another “catch-all.” Inadequate for use as a file chart cabinet.

The feed cart and welding table (with wheels) plans are shown as examples of those which this particular group of teachers rated as most useful. Plans for the assembled-in-place freezer and the poultry picking machine were among those which teachers rated as least useful. Since these plans are out-of-print and several pages in length, pictures of the completed projects are shown instead of the project plans.

The results of this preliminary study, and other more comprehensive ones to be undertaken, will help provide the basis for developing additional farm mechanics' plans of maximum value to teachers and students of vocational agriculture. □

## A teacher asks—

# Are We Teaching Farm Mechanics?

HARRY H. BRADLEY, Vo-Ag Instructor, Fallon, Nevada

The definition of farm mechanics as listed in the Nevada Vocational Agriculture Policies Manual is “farm mechanics is that phase of instruction in agriculture which deals with the repair of farm machinery, the planning, selection, construction, operation and maintenance of farm machinery and equipment.” The policy manual also states that the objective of farm mechanics is to develop in the pupil the ability to do well those

unspecialized and typical jobs of a mechanical nature that are found on the average farm of the community. The skills and abilities learned are “unspecialized” minor repairs, proper adjustments, and operation of tractor or other machinery.

In the past few months, I have done a great deal of study on farm mechanics taught in the high schools and, through Alfred Hansen, Nevada Vocational Agriculture Teachers Presi-

dent, we are preparing a series of articles on farm mechanics dealing with all phases of farm mechanics that will be published in the Nevada VATA newsletter, “The Voice of the Silver Eagle,” as well as some magazines of national circulation.

Just recently I have completed a survey in the Churchill County farming area on the amount of farm mechanics done on the farm in relationship to the farmer's success. The

main reason for the survey was to find out what part high school farm mechanics classes have played on the average farm in Churchill County, and to make changes in the course of study content to fit the required needs of the community. The results were very surprising when analyzed. I broke the survey into three groups of my own selection of farms that had been under the same ownership for several years to eliminate short time farmers in the community. The three groups were: successful farmers, marginal farmers, and farmers that worked off their farms to help support their operations.

All of the successful farmers had farm shops that rated excellent to good. The marginal farm shops rated poor and those falling under the part time group rated poor to no shop at all. The type of shop work done in these three groups varied greatly in that the successful farmer did most of his own shop work on the farm, ranging from complete overhauling of engines and equipment through maintenance, construction of new equipment and farm buildings. The middle group consisted mainly of maintenance, while the last group did very little in repair on their farm machinery.

The third part of the survey showed that the successful farmers ranged

from 50% to 70% savings on cost of repairing, maintenance and construction of their own equipment, while the latter two groups saved very little by their repairs, except a small amount in maintenance. The surprising part of the survey showed that, in many cases, the marginal farmer had a much higher inventory of machinery than the successful farmer had. This was due to the amount of equipment that had replaced other equipment which was unusable due to lack of repairs or the lack of ability to construct equipment at a saving. The marginal farmer's operation most often was much larger in scope as well.

The final part of the survey was about the operator's training in farm mechanics and, again, the highly successful group rated much higher in that they all had had previous training under vocational agriculture or practical experience as compared with none at all for the farm operators in the last group.

A great deal of value can be placed on a personal survey of this type for all of the instructors of vocational agriculture and farm mechanics, and often it can be applied over a larger area than a local situation. The value of this survey shows that training in farm mechanics is

without doubt one of the most important phases of good farm management in that often the machinery and equipment on a farm is equal to at least 50% of the total farm value. The value of the land, buildings and livestock will make up the balance of the farm value, generally around 50% in the Churchill County area.

Vocational agricultural education has as its principal objective the preparation of high school students and young farmers for establishment in farming or closely allied occupations. The yardstick of all occupations, including farming, must be measured in one's success which is based on his ability to obtain and absorb knowledge which can be applied to his operations.

A farm mechanics student should be taken as far as his ability to do will allow. Success in farming is based on the highly specialized training. Most of our machinery dealers and their hired personnel are partially trained as vocational agriculture students, and many of our outstanding garage mechanics have had previous training in our high school agriculture shop. The value of farm mechanics skills taught in our departments becomes greater when the skills are put to use in some advanced type of instruction. □

## Farm Accident Survey

Vocational Agricultural Dept., Clarkston FFA Chapter

E. B. HAUGEN, Vo-Ag Instructor, Clarkston, Washington

Time covered: January 1, 1959 to December 31, 1959.

In the FFA Farm Accident Survey, we find the following results from 28 FFA members reporting:

Number of accidents per household ranged from 0 to 2.

19 members reported no accidents during the year

7 members reported 1 accident in the household

2 members reported 2 accidents in the household

5 FFA members had accidents  
2 children of the household had accidents

2 fathers had accidents

1 mother had an accident

1 dependent in the household had an accident

Age ranged from 5 years to 58

years for accident victims

Average age of those having accidents—24.2 years

8 males reported in accidents

3 females reported in accidents

Cause of accidents:

3 by hand tools

1 by automobile

1 by motorcycle

1 by lift truck

2 by burns

1 by lifting

1 by airplane

1 by a farm implement

One accident caused a broken bone; one accident caused a shoulder to be thrown out of joint; and other accidents seemed to be of a less serious nature.

Time of accident:

9 accidents were in the day time

1 accident was in the early morning

1 accident was in the late evening

Place of accident:

2 in the garage

1 in road or lane

1 in house

1 in other farm building

1 in ball field

2 miscellaneous

1 on highway

1 in barn

1 in barn yard

Part of body injured:

2 on head

2 on leg

4 on hand

1 on body

2 on arm

Eight accidents were caused while on duty; 2 during recreation, and 1 during horseplay.

Time lost:

Time ranged from ½ day to 7 days for one accident. There was a total of 30 full days lost with an average of 3.3 days per accident. There were 32 partial days lost

with an average of 6.4 days per accident.

**Insurance and cost:**

4 were covered by insurance  
6 had no insurance  
1 was partially covered by insurance  
Cost on accidents ranged from \$1.00 to \$260.00. The total cost for all accidents was \$661.00, and the average cost per accident was \$73.44.

**Treatment required:**

3 required doctors  
3 required hospitalization  
5 required home treatment only

**Recommendations:**

Most recommendations indicated that if a little more care had been exercised, the accident would not have occurred. For the most part, minor hazards caused the accidents and most of the conditions causing the accidents have been corrected.

In the non-Future Farmer or control group, we find the following results: (Each Future Farmer also made a survey of accidents during the year for his next door neighbor. There were 28 surveys in this group.)

23 places reported no accidents  
3 places reported one accident each  
1 place reported two accidents  
1 place reported three accidents  
Number of accidents per household ranged from 0 to 3  
2 fathers had accidents  
3 mothers had accidents  
2 children of the household had accidents  
1 dependent of the household had an accident  
1 hired hand had an accident  
Age ranged from 5 to 76 years for the accident victims.  
Average age of those having accidents was 37.7 years. There were 2 under 9 years of age.  
5 males reported an accident  
3 females reported an accident

**Cause of accidents:**

3 were caused by falls  
1 was caused by power saw  
1 was caused by an animal  
2 were caused by bicycles  
1 was caused by an automobile  
There were two accidents that caused broken bones and one accident caused a rupture.

**Time of accident:**

5 happened during the day time  
2 happened during late evening  
1 happened during early morning

**Place of accident:**

2 in farm shop  
1 on the highway

1 in the barn  
2 on the road or lane  
1 in the house  
1 in other farm building

**Part of body injured:**

3 on the thigh  
1 on the head  
1 on the leg  
1 was a broken tail bone  
1 caused a rupture  
2 on the body  
1 on the neck  
1 on the arm  
1 was a broken hip  
6 accidents were caused while on duty, and two were caused by horseplay.

**Time lost:**

Time lost ranged from 1 day to 90 days for one accident. There was a total of 148 full days lost with an average of 18.5 days per accident. There was a total of 36 partial days lost with an average of 4.5 partial days per accident.

**Insurance and Cost:**

5 accidents were covered by insurance  
2 accidents were not covered by insurance  
1 accident was partially covered by insurance  
Cost of accidents ranged from \$15.00 to \$1500.00. The total cost for all accidents was \$2490.00 and the average cost per accident was \$311.25.

**Treatment required:**

2 required doctors  
5 required hospitalization  
1 required home treatment only

**Recommendations:**

Nearly all reported just to be more careful.

While this survey is small in numbers and has certain limitations, it will show trends and can be used as a guide in formulating a course of study in our farm safety work. This is the second year of our survey and, after a few years, it is hoped that the survey will eventually show trends that will be of inestimable value in our farm safety work.

The FFA group had a few more accidents but the non-FFA or control group had accidents that appeared to be more serious and cost more, both in money and in time lost. More accidents also were encountered by the males in each group—72.7% males in the FFA and 62.5% in the control group.

In the FFA group, 26% of the accidents were caused by hand tools and 18% were caused by burns; in the control group, 37.5% were caused by

falls and 25% were caused by bicycles.

**Time of accident:**

In the FFA group, 81% of the accidents happened during the daylight hours; in the control group, 62.5% of the accidents happened during daylight hours.

**Place of accident:**

In the FFA group, 18% of the accidents were in the garage; in the control group, 25% of the accidents were in the farm shop.

In the FFA group, 72.7% of the accidents happened while on duty; in the control group, 75% of the accidents happened while on duty.

**Time lost:**

If loss of time were figured at \$10.00 per day, and \$5.00 per partial day, some value could be placed on lost time. In the FFA, 30 full days and 32 partial days were lost due to accidents. This would amount to \$460.00 for lost time. In the control group, there were 148 full days and 36 partial days lost due to accidents. This would be a total of \$1660.00 for lost time. This indicates that the control group had the more serious accidents.

**Insurance and cost:**

In the FFA, 36.3% were covered by insurance and 10% partially covered by insurance; in the control group, 62.5% were covered by insurance and 12% were partially covered by insurance. In the FFA group, the total cost was \$661.00 other than loss of time; in the control group, the total cost was \$2490.00 other than loss of time.

**Treatment required:**

In the FFA group, 27% required the care of a doctor and 27% required hospitalization; in the control group, 25% required the care of a doctor and 62.5% required hospitalization.

Recommendations:  
Most accidents were of such a nature that the removal of the hazards would have eliminated them. A little care will prevent many accidents. The individual is the key in preventing any accidents. There were no deaths in any of these surveys. □

### Agricultural Education Magazine Subscriptions

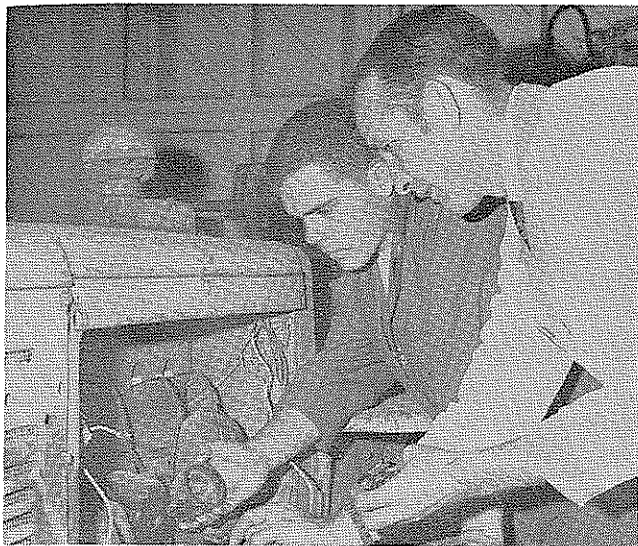
"The total number of subscriptions to the Ag. Ed. Magazine for 1959-60 was 9,839, compared to 10,011 in 1958-59. Since the magazine is our professional magazine and the teachers contribute many articles for publication, we should continue to encourage every teacher to subscribe to it."

Taken from Region III newsletter, James Hamilton, V. Pres.

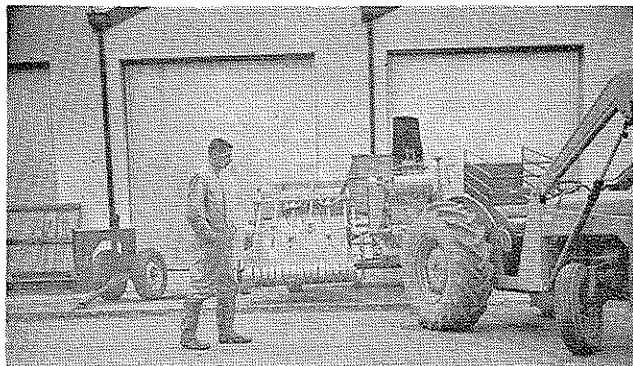


A Live "Farm Power" Unit

As teachers in Agriculture Mechanics we often ask ourselves—"What can we expect to do to strengthen our Farm Power Program?"—Here's what one old make T-6 and a worn out hay baler did for us.



Here an advanced student receives instruction on the ignition system. Installation of parts and rewiring helps to strengthen students' conception of the ignition system. Rotor Points and timing of system should be covered thoroughly.

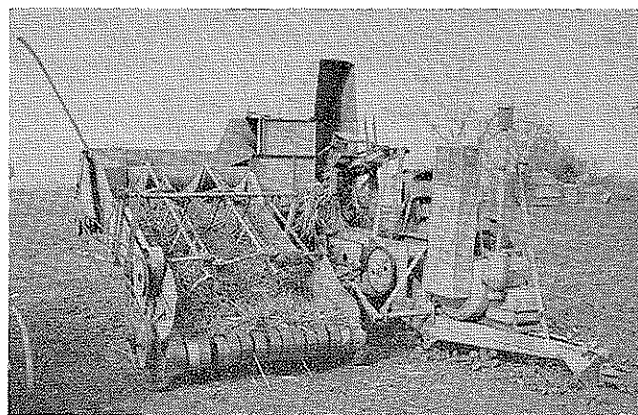


Before the Operation

It appears that this "old" Moline has quit for the last time. Metals are bent, parts worn, and adjustments out of calibration. Yet, within weeks we see a new face on "her."

After the Operation

Yes, now we see that "New Look" that we had hoped for. Teeth have been straightened. Parts replaced or repaired. Metals bent and welded back to shape. Painting adds to the finished product.



Some ideas for—

# Beating the High Cost of Farm Machinery

MELVIN J. ELKINS,

Vo-Ag Instructor, Union High School, Yuba City, Calif.

As teachers we are so adjusted and satisfied in teaching "units" of welding, woodwork, and the other areas in mechanics, that we often forget that there are many skills and problems solved by students on repair projects. We realize that working on greasy metals and broken parts might not be as glamorous and romantic as cutting fresh smelling pine boards; however, there is a question if the latter has the challenge our students need today. "Let's face it." In these days of higher expenses for farmers and agriculture businessmen, we must teach maintenance as we never have before. New machinery costs approximately \$1.10 per pound. Our students must realize this and take advantage of the situation by following a strong farm machinery repair program.

In the above pictures we see students observing and working on a T-6 tractor and hay baler. These two pieces of equipment serve a two-fold objective: 1) to be used for instructional use in a three week unit in

farm power; 2) for experience purposes (as a shop project) for many students.

At this time many readers might have these questions:

1. How and where would one get the equipment needed for a "unit" of this type?
2. Who would finance such a unit?
3. What skills would be involved?
4. How could you use this equipment to supplement other individual studies?
5. What other sources of instruction could be used with this unit?

Below are ways which might serve as partial answers to the above questions:

1. A—Local farmers can supply equipment.
- B—Equipment dealer will supply either new, used or broken equipment.
- C—Students in class or their parents.

2. With some reflection on this question, one can see where a repair unit could possibly cost much less than building new equipment. PRECAUTION: If equipment is obtained from outside sources, make sure to have a good outline of intentions and costs of this unit. With this type of approach *almost anyone* would loan equipment for educational purposes.
3. Skills involved would be painting, mechanical adjustments, welding (gas and arc), building up worn parts, installation of kits, installation of new parts, rewiring, etc.
4. Abilities and principles taught would include fundamentals of engines, types of power, gear ratios, hydraulics, ignition systems, fuel systems, car and lubrication.
5. Many manufacturers of agriculture machinery have pamphlets, books, charts, etc. to better illustrate the mechanics of machinery.

Many of the things suggested might not fit each unique situation; how-

ever, there could be purposeful learning and profiting situations derived from teaching a farm power repair

unit.

It may be uneconomical to treat all equipment with a complete over-haul,

never-the-less here is where one "old" T-6 and hay baler have given new horizons for itself and its providers. □

### Suggestions for securing—

# Projects for the Farm Mechanics Program<sup>1</sup>

W. FORREST BEAR, Agricultural Engineering Department, Iowa State University

(Note. This article is based on informational data from a survey taken by the U.S. Office of Education, and the author's six years of experience as a vocational agriculture instructor and three years experience as an instructor in the Iowa State University Agricultural Engineering Department.



Forrest Bear

"My boys just never seem to have any projects to work on in farm shop and there doesn't seem to be any interest in constructing shop projects." How many times have you heard a vocational agriculture teacher make this statement? The neighboring vocational agriculture instructor always seems to have interest in shop construction and has shop projects which fit into the farm mechanics program. Is this an accident or the result of good planning?

Farm mechanics is a part of the entire vocational agriculture program. Building a hog house is as much a part of the supervised farming program as learning to mix the proper ration for litters of pigs. The good farm mechanics program develops during the home farm visits.

Is the quality of the supervised farming program directly proportional to the number of farm visits? There must be a correlation, and could it also be assumed that a large number of farm visits would be indicative of more farm mechanics instruction on the farm? A partial conclusion can be drawn in regard to this assumption by studying the survey conducted by Alvin H. Hollenberg,<sup>\*1</sup> Farm Mechanics Specialist, U.S. Office of Education.

#### Visits to Farms of High School Students

Hollenberg, in 1957, surveyed 1,050 vocational agriculture instructors in

#### NUMBER OF TEACHERS' VISITS TO HIGH SCHOOL STUDENTS' FARMS DURING WHICH INSTRUCTION IN FARM MECHANICS WAS GIVEN

Number of Visits	Departments Reporting	
	Number	Per Cent
1-10	74	12.7
11-20	72	12.3
21-30	78	13.4
31-40	48	8.2
41-50	36	6.2
51-75	52	8.9
76-100	47	8.1
Over 100	49	8.4
None reported	127	21.8
Total	583	100.0

the United States. Of the 676 questionnaires returned, 93 per cent or 583 schools conducted a farm mechanics program. The vocational agriculture instructors were asked to report the number of farm visits per department which included some instruction in farm mechanics with the high school students, young farmers and adult farmers.

As shown in the table above, 22 per cent of the vocational agriculture departments reporting did not answer this item on the survey. Thirteen per cent of the teachers made between 21-30 farm visits yearly during which farm mechanics instruction was given whereas only 6 per cent made 41-50 such farm visits.

The average student enrollment per department was 43.3. Instructors in departments with this average number of students would have made farm visits to less than one-fourth of the students in 74 departments, one farm visit per student in 36 departments, and at least two and one-half farm visits in 49 departments.

The total number of farm visits devoted to farm mechanics instruction is definitely not very impressive. These farm visits were not necessarily made for the express purpose of teaching only farm mechanics. It would be interesting to know the

total number of visits made per department.

The next most interesting fact might be, "What did the vocational agriculture instructor teach or discuss during the farm visit?"

The vocational agriculture instructor who peeks into a barn through a broken window pane or crawls through a "Tank-Trap-Type" gate to discuss the hog ration as the pigs eat from a mud hole has already passed up three good items for farm mechanics instruction. This instructor could well have been the one with the students who *just don't have shop projects*.

The supervised farming program is the backbone of the vocational agriculture program. Productive projects are important, however, the supervised farming program also includes supplementary farm practices and improvement projects. Farm mechanics is directly related to all three phases of the supervised farming program.

#### Young Farmer and Adult Farmer Visits

Hollenberg's survey revealed a very low number of farm visits to young farmers and adult farmers for the purpose of teaching farm mechanics. Seventy-seven per cent of the departments did not report any visits to young farmers nor did 63 per cent report any visits to adult farmers.

\*1Hollenberg, Alvin H., Farm Mechanics in Vocational Agriculture, A Survey, U.S. Department of Health, Education, and Welfare, Office of Education, 1959.

Departments which reported one to ten visits during which instruction was given to young farmers and adult farmers totaled 9.4 and 12.2 per cent respectively. These percentages represent the largest groups of the total remaining departments. Either there are few farm visits or farm mechanics instruction is rarely considered.

#### Good Records

Vocational agriculture instructors keep many records, however, the information requested by Hollenberg for this survey is not generally recorded for later reports. Therefore, it could be assumed that instruction in farm mechanics was given to high school students, young farmers or adult farmers without a record being kept. It must also be stressed that type and quality of instruction offered by the instructor has not been considered in this survey.

#### Planning for Projects

The vocational agriculture teacher needs to have an organized four year farm mechanics teaching outline during which specific problem areas are studied. It will be impossible to follow a detailed outline because farm mechanics should be taught around the student's supervised farming program. The teaching program will serve only as the "home base" for the farm mechanics problem areas studied each of the four years. Specific shop projects which will be needed each year for the teaching program can be spotted during farm visits.

These shop projects can be encouraged by an organized planning program. The following procedures might be beneficial in the farm mechanics program:

1. Make farm visits.
2. Keep a farm visitation record

book.

3. Be alert for potential farm mechanics projects.
4. Know the projects you will need to teach the farm mechanics problem areas for the next year.
5. Promote the shop projects needed for the teaching program.
6. Promote projects which will challenge the student's shop ability.
7. Plan the projects with the parents.
8. Demand top quality workmanship.
9. Complete the projects according to the planned schedule.

With farm mechanics projects being planned as a part of the supervised farming program there will be greater student interest, a better educational program and a crowded shop. □

Learn about your students' other courses—

## Don't Be Afraid to Ask

W. CONRAD SEARCH, Vo-Ag Instructor,  
Webberville, Michigan



W. C. Search

As teachers of vocational agriculture, we have an ideal environment where learning can occur. We work with our students as individuals, in small groups which are interested in a similar problem, or in regular classes. In these various situations, we arouse our students to recognize their problems and encourage them to successfully solve them. We carry the lesson to the point of applying the new understanding in farming programs. We do this because we know we haven't taught until the student changes from his original understanding and practice to a new understanding and practice.

To bring about these changes in understanding, we all know we must understand each student as an individual knowing his home environment and the experiences upon which he can build new understandings. Fortunately, we can learn more about

our students as individuals because we are able to visit their farms. From the visit, we gather much information about home environment and experiences of our students. But is the visit the end point in understanding our students? We must also learn of their past school experiences. This means that we have a definite responsibility to learn what each teacher has contributed. In this way we, as vocational agriculture teachers, can better adjust our course of study to provide a foundation upon which our students can build. For instance, a lesson on artificial breeding of dairy cattle could be built upon the basic understandings of reproduction of mammals taught in biology. Another example would be the arithmetic procedures and skills taught in the eighth grade which could be applied in a lesson on feeding or farm management. Everything we teach can be taught so that it builds upon understandings, skills, and abilities taught in other classes and lower grades.

With all the activities we are involved in, it is extremely easy to forget that we have a responsibility to ourselves and our fellow teachers to understand the experiences the school is providing for our students. As we increasingly strive to communicate

with other members of the faculty we will find many rewards. As other teachers discover that the vocational agriculture teacher is interested in what they are doing, they will become interested in what the vocational agriculture teacher is doing. As a result, ideas will pass between them and understandings upon which further learning can be based will be developed.

To get the greatest returns from this type of experience, teachers must also be willing to change. Just as learning does not take place with the student until he changes, a teacher hasn't learned anything about his student's school experiences until he shows a change in his teaching activity. Understanding the objectives, techniques and understandings of other members of our staff can result in great returns for the time spent. These returns will be meaningless if we permit other phases of our program to slip.

Vocational agriculture teachers have an excellent environment in which learning can take place. Let us add to this an understanding of how our students fit into their total school experience. We can do this by not "being afraid to ask" the other teacher what he is doing. If we diligently do this, I am certain that others on the staff will be interested in us, improved understandings are bound to occur and we will be seeing improved learning for both our students and ourselves. □

# The Economics of Competent Leadership

W. T. JOHNSON, National Executive Treasurer, NFA, A. & T. College  
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Tuskegee Institute, Alabama

A clarification of the subject will be provided by giving a definition of the major components as stated.

*Economics Defined—A significant Function in Leadership.* Economics is that branch of the social sciences which deals with the satisfaction of human wants in a world of relative scarcity of goods and services, with the various want-satisfying processes that man carries on, and with the various organizations and institutional arrangements that he establishes to cope with conditions of scarcity. (Leadership must be included.)

*Leadership Defined—A Responsible Factor.* Leadership is the activity of influencing people to cooperate toward some goal which they come to find desirable.<sup>1</sup>

The tendencies to lead and to *obey and follow* are instinctive in the societies both of the lower animals and of human beings. Examples of the former are the ants, the honey bees and wolf pack. In most cases the variations in the innate and acquired abilities of the members of the former groups make it possible for those best fitted to be selected as their leaders to direct the activities of their groups. This is not so simple to achieve among the latter group—our human society.

*The Nature of Competent Leadership.* The nature of competent leadership with respect to the needs of competent leadership will be explored from the standpoint of clarifying the nature of leadership relative to other social aspects.

"Herewith, the cries in the land for greater competent leadership and a 'sense of national purpose' rise in considerable measure out of our despair over a debilitating relativism pervading American society. The nature of this relativism is that we no longer are sure that we can through our own mind and conscience make contact with *objective value and truth*, that

we can decide what is the 'right thing' to do amidst the complexities and changes of contemporary life. This relativism characterizes the 'religious' person uncertain that his personal beliefs give significant insight into the corporate problems of his society, as well as the 'scientific' person who senses that his carefully developed facts are not adequate to make a moral judgment. Relativism is increasing. In no area of life does the loss of nerve become more conspicuous than in politics where men live constantly under the knife of moral choice."<sup>2</sup>

These two areas were presented only as examples. The reader is cognizant that this has permeated other areas of our society.

The nature of leadership is further referred to as one's ability to establish significant relationships between the short-run and long-run, the quantitative and qualitative, the tangible and intangible dimensions of a course of action. Additionally, it involves a commitment to a course of action that the group is willing to endorse and follow.

The competent leader of tomorrow will be confronted with a multiplicity of problems representing an amalgam of the social science disciplines. An understanding of the underlining forces which move and change socio-economic and political structure is a prerequisite. His academic training must not be limited to the extent that it could be referred to as *micro-training*. The new leader must be trained in such a manner as to move accurately from policy to action, if he is to effectively coordinate his position with that of the social milieu about him. To accomplish this, leaders should understand the *macro-society* or the aggregate. The macro-approach regards the whole problem by seeking aggregative causes and effects. To

<sup>2</sup>Underwood, Kenneth, Professor of Social Ethics, Wesleyan University, in a paper presented to Discussion Group 28 at the Fifteenth National Conference on Higher Education, sponsored by the Association of Higher Education, Chicago, March 8, 1960.

<sup>1</sup>Ordway Tead, *The Art of Leadership*, New York, McGraw-Hill Book Company, 1935, p. 20.

increase our economics, we must constantly remain aware that as we move from a relatively restrictive life, formerly bound by rigid ethnic ties, to a less-and-less restrictive life, that our preparation must be thorough to favorably meet firm competition on all fronts.

Desirable intentions on the part of unprepared leaders, unfortunately, do not assure the accomplishment of desirable actions or acts.

*Early Philosophy on Leadership.* Over eighty years ago a famed man making a speech to a large group of people, both white and nonwhite, said, and we quote, "There is no defense or security for any of us except in the highest intelligence and *development of all*. If anywhere there are efforts tending to curtail the fullest growth . . . let these efforts be turned into stimulating, encouraging, forces and making him the most useful and intelligent citizen. Efforts or means so invested will pay a thousand percent interest. These efforts will be twice blessed—"Blessing Him that gives and Him that takes." (End Quotation.) That man was Booker T. Washington, who founded Tuskegee Institute in a "Shanty" in Alabama on July 4, 1881. This quotation was taken from his famous "Cast-Down-Your-Bucket-Where-You-Are," a speech delivered at the Cotton States Exposition which convened in Atlanta, Georgia, in 1895.

The phrase, "development of all," in this case will be treated in relationship to the economics of leadership. More than a safe proportion of our population considers economics of leadership in a restrictive and narrow concept as only the production of goods and services, the distribution of income, or even a more elementary conception as constituting merely the working and receiving of salaries and wages, the consumption of goods and services, saving money, investing money, the paying of taxes, financing and borrowing. This unabridged conception of economics of leadership should and does involve more than this.

*Characteristics of Competent Leadership with Respect to the Principles of Economizing.*

The following represents several of the essential characteristics of competent leadership with respect to economics in its broader concept. The policy on the allocation of space for articles and expediency will not permit us to develop these character-



istics of economics apropos the subject, "The Economics of Competent Leadership," in their entirety; suffice it then, that a brief statement of each will follow:

## I. TIME

1. *Leadership Economics through Timeliness and Promptness*: It is to the leader's and subsequently to the group's advantage to anticipate the most appropriate time to present information or to initiate a new program, or to promulgate something that is vital to the group. Likewise, there is economy in varying degrees in a leader's ability to develop exacting relationships with his followers to the end that they will always be prompt on activities, thus the savings of many man hours that would be lost otherwise. In our present day life, this is essential and will be more so in future life.
2. *Leadership Economics through Initiative*: The power to originate useful ideas and execute them effectively without being told by anyone is economical in our leadership endeavors.
3. *Leadership Economics through Dynamic Motivation*: Sufficient ability to incite and to instigate worthwhile impulses on the part of followers is economical. To be a dynamic motivator, one may need to deal at times in impressionism.

## II. FORM

1. *Economic Leadership by Being Industrious*: Made possible through steady application to a task. To re-emphasize, be zealous and stick to the program for the purpose of being very productive. Agricultural leaders, both white and non-white, in this state (North Carolina) have exemplified tremendous advancement in economic leadership by assisting operators through industriousness in the addition of land holdings. Nonwhite operators were assisted by their leaders in the addition of more than 100,000 acres of land to the ownership category between 1945 and 1955. Contrasted to this, nine of the seventeen Southern states registered a total loss

of over 500,000 acres of land that were once owned by this ethnic group either in full or in part. North Carolina non-whites added more acreage to ownership than any other non-white group within the Southern states over this period. White operators of this state (North Carolina) added an impressive 1,371,812 acres to the ownership group in the period indicated.

2. *Leadership Economics of Perseverance*: Don't use the phrase, "It can't be done." If the action decided upon is appropriate, a competent leader will not vacillate in any manner either in speech or in other activities, but will in lieu definitely demonstrate his ability to clearly present ideas and to keep on until the desirable objective(s) is achieved.
3. *Leadership Economics through Thrift*: Employ positive techniques that will result in the thrifty utilization of ALL available resources in our homes, in our churches, in our schools, in our lodges, on our farm, et cetera. The word "ALL" should always be greatly emphasized in connection with resources. Leadership in agriculture would certainly like to realize this in continuous increasing degrees as time marches on.

## III. PLACE

1. *Leadership Economics through Flexibility*: This is the leader who is endowed with the qualities to recognize beneficial changes or changes that will be useful to the group. Inertness, complacency and the resistance to change have caused inestimable loss through time immemorial. When history proves all progress starts with change, how can anyone be content to do things as in past years? Yet, many do. Why not question the reason for doing everything you do today to find a better way?
2. *Leadership Economics through Fearlessness*: This can best be explained in the phrase, "Don't be a coward." During this period of global uncertainty, a leader must possess courage and use his courage to "size

up" and "face up" to adverse and difficult problems.

## IV. SERVICE

1. *Economic Leadership through a Pleasing Personality*: You will note that we have placed "pleasing" before "personality." As much as we regret and are reluctant to say this, we have some leaders who do not have pleasing personalities. Those without such personalities often times drive away more than their share of members or participants, that otherwise would be active. We all realize that Franklin D. Roosevelt had a pleasing personality. For if he had had the health and strength, he no doubt would have been President again and again as he had been elected four consecutive times.
2. *Economic Leadership through Integrity*: Realized by being honest and through moral soundness. If you strive to possess moral soundness, then there will not be a question as to whether we abide by the Beatitudes (Matthew 5:3-12). We presuppose, therefore, that the readers know the Beatitudes and respect them. Otherwise, please refer to them as indicated above. Dishonesty in leadership in our government has resulted in dis-economics in our time; to mention a few, the Five Percentors, The Mink Coats, and we dare not mention the Alpaca Coat.

*The Characteristics of Competent Leadership with Respect to Economizing on the Followers' Thinking.*

The people whom you lead want to say to you, "Leader! If you want my loyalty, interest and my best efforts as a group member, you must take into account the fact that . . ." (Please envision yourself as the people saying these words to their leader):

1. We need a SENSE OF BELONGING—We need to be wanted.
  - a. We need a feeling that no one objects to the presence of any of us.
  - b. We need a feeling that we are sincerely welcome.
  - c. We need to know that we can share in planning and group's goals.
  - d. We need to feel that the goals make sense to US.

e. We need to feel that what we are doing contributes to the betterment of human affairs.

f. We need to see that progress is being made toward the goals *WE* have set.

Finally, on this point, the greatest problem confronting the lack of competent leadership is the sin in all men, manifested in such a preoccupation with themselves that they are incapable of a creative and grateful response to the noble deeds of other men and God in the world.

Therefore, a person who possesses the ways and means of effectively assessing those inner recesses of the human mind has the use of something that is very valuable. For certainly an understanding and an appreciation of the latent forces which drive individuals to action and to effectively combine and coordinate their creative powers with those of other men will then permit the use of the energies for the greatest social good. Man's mastery over material things in recent years has done much to release him from mean tasks and the drudgery of much common labor. Yet, in a sense, he is not very far removed from barbarism in his relations with other human beings. If our relationship can be so directed by good leaders so that we can harmoniously work-with-and-not-against our fellowmen, our accomplishment then will be the attainment of peace, happiness and finer cultural values. Intelligent group

meetings as those found in the program of vocational agriculture may be the socializing influences that will assist in preventing disasters, chaos, juvenile delinquents, drunkards, high divorce rate, disharmonies in the home and dereliction of church and other religious activities.

It is then that we can organize to effectively buy in groups, bargain to sell in groups and to save for our children's education in groups just as we save for old age through our group action in the Social Security Program.

*Finally, the Economy of Competent vs. Noncompetent Leader*

To strive to be a competent in lieu of a noncompetent leader in your relationship with people with whom you deal can mean the difference between high level achievement and mediocre achievement particularly in our present day and future cultures. The competent leader knows that he is *NOT* proprietor of the group by virtue of him having been elected or chosen as the group's leader. This is not true for the noncompetent leader; he develops a climate of possessiveness by repeatedly using such words as "I," and "My." The following is a presentation of a comparative interpretation of noncompetent VS competent leader.

1. The NCL\* drives his men; the CL\*\* coaches them with understanding.
2. The NCL\* depends upon

authority; the CL\*\* depends upon developing good will.

3. The NCL\* inspires fear; the CL\*\* inspires enthusiasm.
4. The NCL\* always say "I" or "My"; the CL\*\* always says "We."
5. The NCL\* assigns the tasks; the CL\*\* sets the pace of the assignment.
6. The NCL\* says "Get here on time"; the CL\*\* arrives for the activities ahead of time.
7. The NCL\* often engages in dishonesty; the CL\*\* employs the honor system.
8. The NCL\* charges the blame for the breakdown or whatever is wrong on someone else; the CL\*\* takes the blame and quickly resolves the situation.
9. The NCL\* is jealous of his followers' security, knowledge, or anything that his followers excel over him; the CL\*\* is not jealous and is happy over his followers' accomplishments.
10. The NCL\* knows how it is done, but is reluctant to illustrate; the CL\*\* happily shows how it can be done.
11. The NCL\* makes work a drudgery; the CL\*\* makes it an enjoyable game.
12. The NCL\* says "When I say go, 'I' mean Go!"; the CL\*\* says "Let's go."

\*Noncompetent Leader.

\*\*Competent Leader.



**FARM MECHANICS INSTRUCTION IN VOCATIONAL AGRICULTURE** by H. M. Byram, Guy Timmons, Carl Albrecht, and Charles L. Langdon. Bureau of Educational Research, College of Education, Michigan State University, East Lansing. 64 pages, 1960. Price \$.60.

This new bulletin is recommended as a valuable, up-to-date reference for teachers, school administrators, advisory council members, and others who want to modernize farm mechanics programs.

The authors do an excellent job of pointing up the need for better instruction in farm mechanics. Current trends in various phases of agriculture are

listed and implications of these trends for instructional programs are suggested. Sections of the bulletin are devoted to procedure for planning a course of study, on-farm instruction in farm mechanics, teaching techniques, safety, evaluation, class scheduling, management of the shop and shop classes, and instruction for out-of-school farmers. A valuable list of references and teaching aids is included as an appendix.

In writing this bulletin Byram, Timmons, Albrecht, and Langdon have provided us with a valuable guide for overhauling farm mechanics programs. This publication should be useful in college courses in farm mechanics and teaching methods. Supervisors can use it at sectional meetings of teachers or in their consultations with individual teachers. Advisory council members, school board members, and school administrators will find this bulletin to be excellent background reading for the job of revamping and revising farm mechanics programs in their schools. The

bulletin will be useful in all of the 50 states.

Professor Harold Byram is Chairman of Agricultural Education Service at Michigan State University. Professor Timmons is a member of the Department of Teacher Education and Professor Albrecht is a member of the Department of Agricultural Engineering at Michigan State University. Mr. Langdon is a member of the staff of the Michigan Department of Public Instruction.

Paul E. Hemp,  
Teacher Education,  
University of Illinois

**A Happy and Prosperous  
New Year to All  
from the Magazine Staff**

# On Preparing Teachers

C. E. DEAN, Teacher Education,  
Agricultural and Technical College  
of N. Carolina, Greensboro

Select men and departments that represent the best to be found in the system to serve as supervising teachers and centers for the guidance of future teachers.

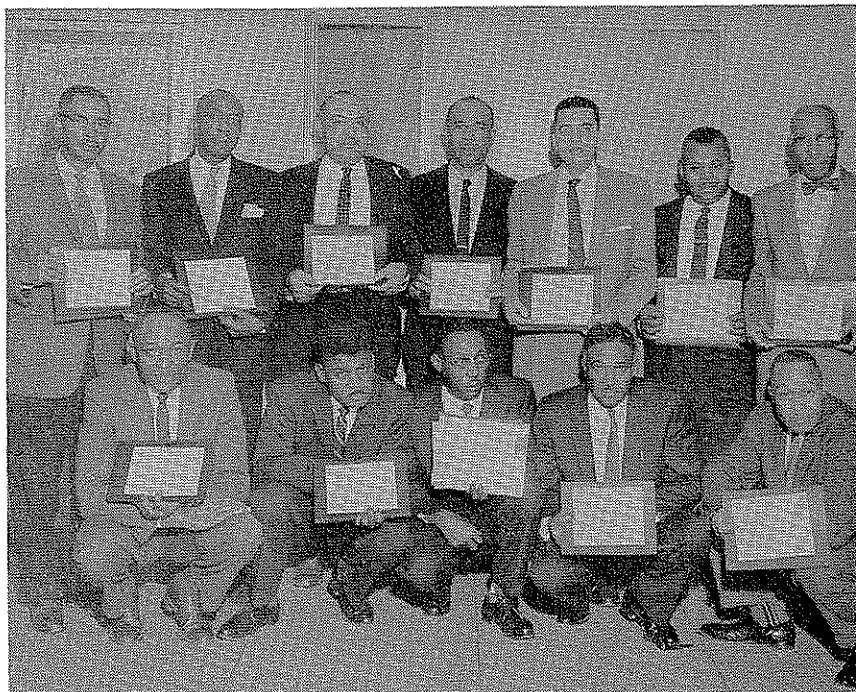
The teacher education personnel and the supervising teachers work together in building a program which will be devoted to the best guidance of student teachers and the development of the supervising teachers.

The teacher education personnel and the supervising teachers set high standards for the student teachers and also conduct frequent evaluations so that the work may be continually up-graded.

The teacher education personnel guide the program so that the administrators might help to provide opportunities for the maximum growth on the part of the student teachers.

The teacher education personnel may plan conferences for supervising teachers that will provide for frequent participation of authorities in the fields of general education and agricultural education.

The teacher education personnel may make a practice of giving the supervising teachers assistance with special projects when help is needed and the latter cannot realize the goals without help.



The above picture represents a recognition activity which took place during the Tenth Annual Conference of Supervising Teachers of Agricultural Education at The Agricultural and Technical College in Greensboro, North Carolina, on February 27, 1960. The above individuals have served for more than ten years as Supervising Teachers. The individuals in the picture are: Front row left to right—Messrs. J. D. Lennon, M. S. Sanders, J. H. Dickens, W. D. White, and J. J. Lanier. Back row left to right—Messrs. R. K. Wright, A. N. McCoy, R. A. Lewis, E. W. Draughan, J. M. Murfree, I. C. Rogers, and J. L. Maffitt. Two of the men absent due to illness were: Messrs. G. K. McKeathen and H. M. Hargrave. All men serving as Supervising Teachers have the Master of Science Degree in Agricultural Education with the exception of three who are now in the process of meeting these standards.

The teacher education personnel may provide some forms of recognition for persons who have served very efficiently as supervising teachers.

The teacher education personnel may keep a rather complete record of the student teachers who do their work in particular centers so that the desirable results of these young teachers may be reviewed in some of the conferences.

Finally, the teacher education personnel and also the supervising teacher personnel might seek the suggestions for improvement from the supervising teachers and the student teachers at all times.

The citations were given by the College in recognition of ten years or more of dedicated service in the training of new teachers of vocational agriculture. □

## News and Views of the Profession

### Aebischer Vo-Ag Chief



Dale C. Aebischer

Dale C. Aebischer, 34 South Eau Claire Avenue, Madison, Wisconsin, was appointed chief of the rural division, State Board of Vocational and Adult Education, September 1. He succeeds Louis M. Sasman, retired.

A native of Wisconsin, Aebischer was born in Chilton.

He attended a rural elementary school in Calumet county, graduated from Chilton high school, and completed his undergraduate work at the University of Wisconsin in 1928 with a bachelor of science degree in agriculture. In 1949 he completed his master's degree at the University of Wisconsin after graduate work at the University of Minnesota and Colorado State University.

Aebischer was employed as an instructor of vocational agriculture by the Mineral Point Board of Education; and in Eau Claire by the City Board of Education and the Board of Vocational and Adult Education. He has also been

employed as a field man for the Wisconsin Livestock Breeders' Association.

The 53-year old agricultural teacher has had 14 years of service with the rural division of the State Board of Vocational and Adult Education, according to C. L. Greiber, state director. As a rural division supervisor, he had contact with most of the 279 Wisconsin chapters of the Future Farmers of America.

A co-author of "How Good Is Your Land?" a handbook of land judging, Aebischer is a member of Alpha Zeta, honorary agricultural fraternity. He also received an honorary American Farmer degree from the Future Farmers of America. His hobbies include photography, fishing and boating. Mr. and Mrs. Aebischer, Madison residents since 1946, have a son Edward, 23, and a daughter Carole, 20. □

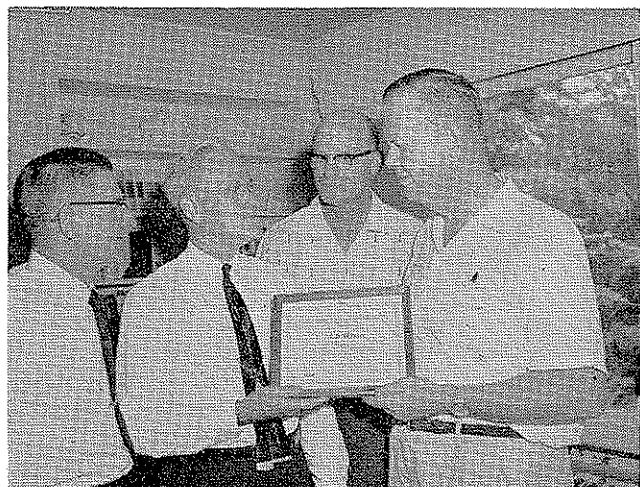




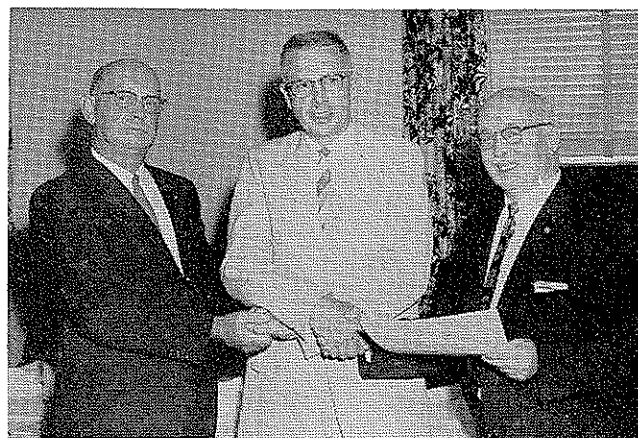
Wisconsin State FFA Officers at the Chilsen Timber Harvest Forest, Merrill, Wisconsin, on their annual good-will tour. Left to right: Robert Oleson, Vice President, Section V; Howard Richards, Treasurer; Robert Brod, Secretary; Orwill Hagen, Vice President, Section IV; C. H. Bonsack, Executive Secretary; Douglas Wagner, Reporter; Lowell Pritchard, President; Louis M. Sasman, Adviser.



Dr. W. H. Wolf of the Department of Agricultural Education at Ohio State University keeps his hand on the cash register as members of the student teacher organization operate a lunch counter during the Ohio F.F.A. Convention.



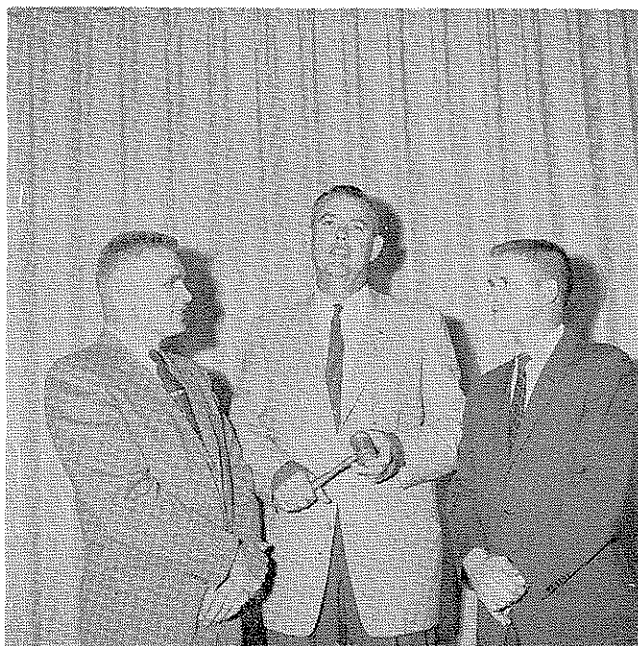
F. D. Johnson, NVATA Vice-President, Region V, shown presenting J. B. Monroe (retired), former head teacher trainer, Agricultural Education, Clemson College, and honorary life membership in NVATA. Looking on are W. E. Gore, State Supervisor, and D. R. Chastain, Past-President of SCVATA. Left to right—Gore, Monroe, Chastain, and Johnson.



Past President George Dodge, center, N. Y. Association of Teachers of Agriculture congratulates Oliver Watkins left and H. B. Allen right following the presentation of retirement certificates and pins at the Association's 50th Annual Meeting on June 28, 1960. (Photo by W. W. Sharpe)



Eight new instructors were presented the NVATA Creed by the President Leo Vossler of Parshall, N. Dak. Others in the picture are from left to right: Noel Lofthus, Leeds; Murl Linke, Rolla; William Pogatshnik, Napoleon; Robert Krause, Michigan; Willis Hanna, Crosby; Larry Selland, Killdeer; Carl Haas, Tappen; and James Well, Bowman. They also received copies of the NVATA Constitution.



Joe Jewett, Past President of Michigan Vo-Ag Teachers' Association; Lucian Fay, newly elected President; and George Buchanan NVATA Vice-President—at Michigan Summer Conference.