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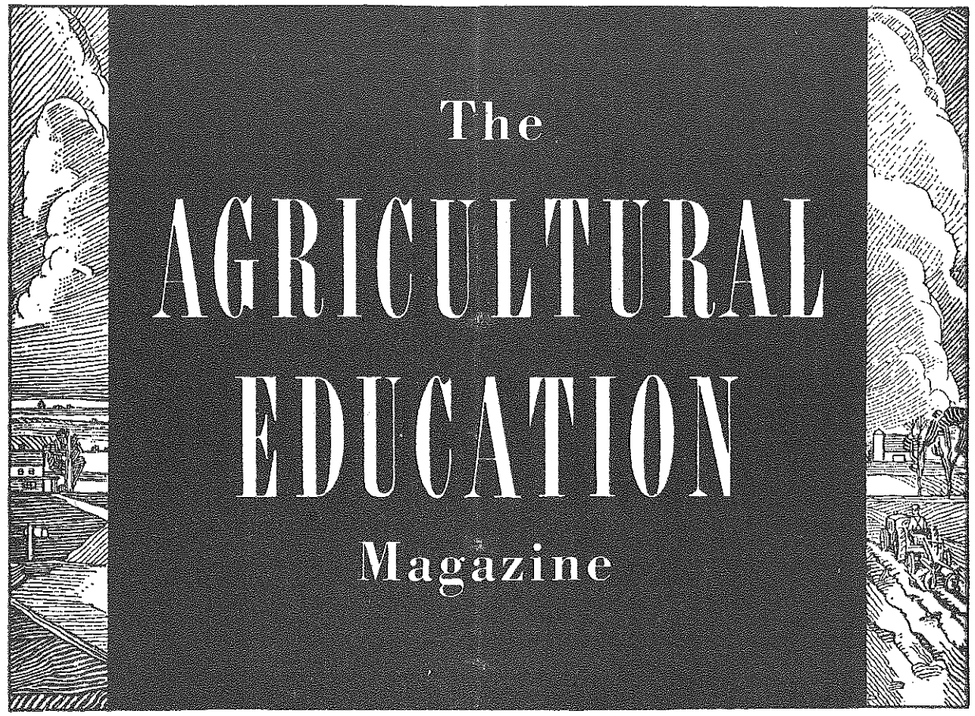

The AGRICULTURAL EDUCATION Magazine

THE best form of efficiency is the spontaneous co-operation of a free people.

—Woodrow Wilson

VOCATIONAL AGRICULTURE
For
TEACHERS
Teacher-Educators
And Supervisors
OFFICIAL PUBLICATION

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Editorial Comment

Our Job—Now and Later

VOCATIONAL agriculture teachers, supervisors, and teacher-trainers are now engaged in a big undertaking. We have asked for and have been given grave responsibilities in the war program.

We told the people, thru Congress, that we would assist in training the farmers in the care, repair, and operation of farm machinery. We told them that we would instruct the farmers in methods of increasing food production. In some states, we have accepted the responsibility of co-operating with other agencies in alleviating the farm labor shortage. In all states, we have undertaken the salvage of war materials and the sale of War Stamps and Bonds to farm boys. These responsibilities have been added to the numerous ones we already had in the teaching of high-school farm boys, out-of-school young farmers, and adult farmers.

Our success with these added responsibilities will affect our program for years to come. Therefore, we dare not fail. Anyone who tries to carry on "business as usual" is hindering the work of those who are attacking our present problems. There is not room in our program for one who tries to hide behind the four walls of a classroom or an office.

Our success or failure will be judged by the people. They will decide if the public school system, especially vocational agriculture, has adjusted its program to meet the needs of our nation at war. If the decision of the public is favorable we will be entrusted with broader responsibilities after the war is over. During the peace that follows, vocational education in agriculture will not return to normal; the prewar conditions can never return. Vocational agriculture, after the war, will face continually changing situations. Teachers, supervisors, and teacher-trainers who attempt to carry on as in the "good old days" will find themselves out of adjustment.

We can do the job now entrusted to us. Let us take courage from our past achievements; let us be ready to accept our future responsibilities. —J. D.

Supplementing the War-Production Program

AN OBSERVER said of a teacher of agriculture the other day, "He doesn't know an agrarian revolution is going on." If he doesn't know that, he probably doesn't know either that a world revolution is going on.

Some teachers are going to welcome this year's Rural War Production Training Program because it will allow them to slide back into the easy task of teaching agricultural production and little else as they did in the good old days before the depression. The war-production program should, of course, have the right-of-way in this year's adult classes, but there are other matters of importance which should not be neglected.

It is important that teachers of agriculture continue to think with farmers about *all* of the matters which concern farmers. Some of the things which concern them crucially are very remote in space from them and some of them have not been labeled "agricultural." It is a part of the task of the teacher of agriculture to detect these less obvious influences and to determine their probable effects upon the agriculture and the farm people of his community.

This generation of farmers has the responsibility laid upon it of helping to build a world in which they and future generations can live. It is perhaps their primary responsibility; if they fail in it, nothing else they have done matters. What does it profit a farmer to achieve prosperity thru the ministrations of a teacher of agriculture if anarchy and brutality threaten forever his family and himself?

Teachers of agriculture are responsible leaders of farm people. They will be praised or blamed according as farm people react wisely or unwisely to the world situation. The United States is a key nation in the world. The farmers of America quite possibly for the decisive role they are about to play? What are we doing to make them ready?

The fateful era of postwar transition may not be far away. It will probably be here before we are ready for it. Are farmers going to drift into another period of "normalcy"? Are they going to seek unrealistic and dangerous "isolation"? There are signs that they may.

World affairs as they touch the farmer are a proper and indispensable part of the concern of the teacher of agriculture. He need not become involved politically in their discussion. There is plenty of literature written by persons detached from the political scene which he can use.

One teacher devotes some time each evening after his regular war-production class is over to discussing with farmers any matters they think important. Another has continued his part-time and evening classes devoted to current problems. Another co-operates with other teachers and with community leaders in holding weekly forums for the entire community and classes in social problems which the farmers may attend. A fourth concentrates on helping to build an up-to-date community library on current topics which farmers can and will use. Others use their opportunities at various farmers' gatherings to discuss with them some of the broader issues they face. Where there's a will, there's a way.

If ever there was a clear call for adult education for all, it is now. If this generation of adults fails, there may be no need to educate their children. Increasing food production is a vital part, but only a part, of the responsibilities of the farmer of today. —H. M. H.

Sarcasm—Never

WHETHER the target is "dumbness" in class work or misbehavior, sarcasm is always a boomerang. The real victim is always either the teacher himself or the cause he represents. It causes resentment on the part of the intended victim and often of the other members of the class. It sometimes appears at the moment to get the desired result, but it never gets co-operation. It is a savage and cowardly weapon and leaves salt in an open wound.

Often a teacher has a misunderstanding of all the facts involved and sarcasm leaves no retreat except apology. The pupil feels that the teacher has abused his position of authority. If the teacher postpones the caustic statement he is tempted to make, he will never make it but will attempt something constructive instead.

While the teacher seldom intends deliberately to hurt the pupil, whenever I hear sarcastic remarks by any teacher I feel sorry for the teacher. I am sure the pupils lose respect for the teacher and often resent it deeply. Any reference to limited intelligence, whether true or not, is out of place in the classroom.

After more than 50 years, I still remember with resentment certain smart and sarcastic remarks of teachers who did not wait to understand the situation on which they passed snap judgment. Unfortunately, these remain in my memory more clearly than even the kindly things said by other teachers who never said anything unkind. Yet I loved some of the strictest teachers who had to put me in my place quite frequently but who remembered that I was human.

The use of sarcasm becomes a habit which finally expresses itself almost automatically, with the teacher scarcely conscious of its use. Be kindly, even when you must chastise. How many boys have left your department because they were "sore" at you for unnecessary personal remarks?

Finally, constructive and positive treatment is always preferable to the negative, and sarcasm is never constructive. Sometimes a successful teacher apparently ignores temporarily the situation which tempts him to be sarcastic, but remains alert for a better solution. Nothing is lost by this delay and often the boy shortly falls in line with the program under way, and even with a voluntary apology. Each teacher must watch his step lest he fall into this undesirable habit.

Professional

A. K. GETMAN R. W. GREGORY

The Fertility Problem of Our Soils

W. A. ALBRECHT, Department of Soils, University of Missouri

THE term "fertility" refers to the chemical elements contributed by the soil for plant growth. The productivity of a soil is determined mainly by its delivery of 10 chemical elements in effectively balanced amounts, since these nourish the plants directly and also enable them to use four additional elements coming from the air and water. Crop production depends on the successful management of the soil so that it delivers its fertility to the crops. The fundamentals of the soil processes as they provide the raw materials to initiate and continue the manufacturing business of the growing plant, thru which the sunshine power synthesizes the complex chemical compounds of vegetation, may well interest all of us.

All life depends on this natural chemical industry that draws on the soil for only about five or 10 percent of the plant's make-up, while it draws on air and water for the remaining 90 to 95 percent. The decline of the fertility stores of the soil is bringing these fundamentals into greater significance. It is well that we understand them while our efforts in conservation may still find sufficient soil fertility left to be conserved.

Chemical Elements Needed by Plants

The bulk of all plants is combustible. They are therefore made up largely of carbon, so commonly combined with hydrogen and oxygen in the ratios by which the last two are found in water. This combination of carbohydrates in their various forms is the bulk of all vegetation. When to this chemical combination there is added some nitrogen, the compound becomes protein. For legume crops, these four elements—namely, carbon, hydrogen, oxygen, and nitrogen—are supplied by the air and water. They are chemically combined by the energy of the sunshine. Carbohydrates in particular represent concentrated collections of chemical energy. As sugar, starch, cellulose, wood, and others, they represent fuel values in animal diets.

The protein also represents some energy collection but, more particularly, it is the growth-promoting compound. Cell-multiplying capacity resides in it. If true proteins are to be produced—that is, if the nitrogen and, in some cases, some phosphorus and some sulphur are to be coupled with carbon, hydrogen, and oxygen to make this life-carrying, body-building substance—they cannot be built by sunshine using only air and water. The soil must contribute at least 10 elements. These 10 include calcium, so common in limestone; phosphorus, common in bones; potassium, abundant in wood ashes; magnesium, sulphur, iron, boron, manganese, copper, and zinc. With the cluding as many as 10 elements, and with the shortage in any single element limiting the crop growth, is it any surprise that the problem of supplying the plants with their requisites may be a common one on some of our soil types?

Plant Composition Reflects Soil Fertility Supply

Every plant represents a skeletal structure for absorption of sunshine, intake of carbon dioxide from the air, and absorption of water and fertility from the soil. This structure can be roughly visualized as consisting of woody material much like a building's skeletal frame. Every plant has it. Some have but little more than merely a woody framework. We can then imagine the plant's manufacturing performances in constructing this woody mass largely of carbohydrates. Water and carbon dioxide, both represented by the air and the weather, are the sources of this material. Then, as the soil offers more of fertility to permit the manufacturing and synthesizing performances to move forward at greater intensity, the plants will contain higher concentration of proteins, of minerals, and of other soil-borne substances to be put into abundant seed yield or larger tonnages of forage with high nutritional values for animal consumption. These are the manufacturing activities carried on within the plant's woody frame structure. Roughly, we may view the plants as functioning to make products of value in animal body construction or in cell multiplication for their own growth from the fertility contributed by the soil. They make products mainly of fuel value from the contribution of air and water.

Vegetation can be classified, then, into two groups, the first being the woody or the carbonaceous group when the soil contributes little fertility and compels the plant to operate largely on water and weather. The second is the proteinaceous and mineral-rich group when the supply of soil fertility is large. Forest trees grow on soils of lower soil fertility, while legumes, such as alfalfa, demand higher soil fertility. The first of these two groups reflects the fuel value, and the second the nutritional service in body building, as we all know of alfalfa's service for promotion of growth in young livestock.

Not only in the different plants are these differences found, but even within a single kind of plant there is a similar variation in composition according to the soil fertility. Soybeans, for example, become more woody in character if grown on a limited supply of soil fertility. When more generously nourished, they become rich in protein and rich in minerals as legumes are expected to be. The soil position, irrespective of the plant's pedigree or its parents as performers on some other soil.

The Process of Moving Fertility From Soil Into Plants

Where within the soil are the plant nutrients stored, or where is the fertility retained? This is a question that must be answered if we are to appreciate the fertility problems of some of our soils. More baffling to many is the question, how can the plant get anything from the soil after water has been going thru it long enough to carry soluble materials away? One needs only to recall the universal practice of burying things in the soil to get rid of odors, or of filtering water thru soil or charcoal to obtain clear water, to appreciate the natural phenomenon of absorption by the soil. Filters are made of substances offering extensive surfaces by which materials in solution are taken out of solution and held there safe from removal by more percolating water. The tremendous amount of surface in the clay fraction of the soil is the place on which plant nutrients are absorbed. Even the silt fraction may manifest no small amount of similar performances. It is thru this phenomenon of absorption on its surface that clay serves in holding the fertility elements against loss by leaching and yet in readiness for delivery to the plant roots by exchange mainly for hydrogen given off by the plant.

Principles by Which Plants Feed on the Fertility of the Soil

Perhaps in the simplest way we can picture the plants' getting nourishment from the soil largely as a business of barter or trade. The root, as a celloid with its extensive surface giving off carbon-dioxide that provides hydrogen, is in intimate contact with the clay surface on which fertility elements, such as calcium, magnesium, potassium, and others are absorbed. The hydrogen from the root is a positively charged ion and is traded or exchanged for those of similar charge on the clay. These positive ions, or nutrient cations, on going into the root are synthesized into complexes and carried up into the plant to clear the way for others to follow. Thus the plant gains nutrients or "takes" the soil fertility from the clay to reduce the fertility supply there and in turn to increase the supply of hydrogen on the clay surface.

Soil Acidity Is in Reality a Problem of Decreasing Soil Fertility

Since it is the hydrogen ion that represents acidity, or sourness to our taste, the

the clay means increasing soil acidity. Plant growth and removal of fertility from the soil is then truly a process that makes the soils more acid. In turn, the increasing soil acidity means an increasing degree of exhaustion of the fertility store from the soil. For plants growing on the more acid soils, then, we may expect that they are running a manufacturing business with an output of products with fuel value rather than a value consisting of their high concentration of protein or of body-building minerals. Acid soils are of low fertility and consequently of lower productivity. Their vegetation shifts toward that of mere fuel value.

Cornbelt's Acid Soils Bespeak Fertility Problems

If the clay of our soils gives up its cationic supply of soil fertility in exchange for hydrogen from carbonic acid of root origin, the clay must do likewise to carbonic acid coming from the decaying organic matter within the soil. Percolating waters saturated with this acid leach fertility from the soils and make them acid in the same way as the plants do. Roots of cover crops can intercept this fertility and hold it as organic matter for the next crop. The Cornbelt's (Missouri's) location in the region of higher rainfall and of longer and warmer seasons means that natural weathering has given her the more leached soils, or those soils of lower fertility. As an indication of this fact, we need only to recall that our virgin soils had long been depleted to the point of producing only a woody vegetation, or a timber cover, before they were put under our cultivation. That we should plan for a highly proteinaceous crop like alfalfa on such soil implies immediately that we must expect to provide the extra fertility, and to reduce the hydrogen store on the clay to the extent presented by the fertility differences between the natural woody crop and the introduced proteinaceous one. The very nature of our soils brings a fertility problem with it.

Amount of Fertility Delivered by the Clay

If the plant obtains its nutrients thru surface contact between the root and the clay because of the hydrogen, the amount of nutrients so obtained from the clay of the soil will depend on three factors. The first of these is the total amount of root surface the plant has to offer per unit volume of soil. Densely rooted plants get more fertility than those only sparsely rooted. Bluegrass, with 66 square inches of root surface per cubic inch of soil, can take more by exchange than soybeans with only 2.5 square inches in the same soil volume. The second factor is the amount of clay surface, rather than the surface of silt or sand the soil has, since little fertility is absorbed on these latter mineral separates of larger size. The third, and important factor, is the degree of saturation of the clay by the nutrients, rather than by hydrogen. Much clay in a soil means more chance for the roots to make contact with nutrient-carrying surfaces. Here is the reason why heavy clay soils are appreciated for their productivity, even if often hated because of their intractability. Ancient civilizations on sandy soils have not been long-lived. Those on clay soil have persisted thru centuries. Regions of older civilizatent, because only such a soil would retain its productivity thru those long periods of cultivation. But by far most effective in raising the productivity of the clay is the degree to which it is saturated with fertility rather than with hydrogen, or with infertility. This variation in degree of saturation is the hidden condition that is not recognized and in it many of our soil problems originate. By it much can be done for their solution.

Tho Cornbelt (Missouri) soils tend to be high in acidity, it is well to remember that if a soil can hold much hydrogen to make it acid, there is a large capacity to hold other positive ions that make possible fertility. This fact offers hope for long-continued use of our soils if our management regularly puts the fertility into those soils.

Silt Minerals Represent Reserve Fertility

The clay and the silt minerals undergo interactions of exchange, much in the same manner as is true for the clay and plant root. This is one of the fundamental facts pointing to the possible use of the reserve fertility in the mineral crystal of the soil. The clay plays an important part as intermediate agent between the plant root and the mineral crystal. The plant can set nutrients by direct root contact with the mineral crystal, but plant growth by this means has been experimentally found to be at a lower rate then when an acid clay serves as intercedor between the plant and the mineral crystal. We can visualize the clay (a) as an acceptor of hydrogen from the plant root, (b) as a conveyer of it to the mineral in concentrations of significance for releasing the nutrients in the mineral by this acid effect, and then (c) as the deliverer in return to the plant of the nutrient set free from the mineral. The acidity in the clay is in reality of service rather than of detriment. Because the clay supply of fertility is rapidly exhausted, it is in the stock of minerals, particularly those of silt-size particles in the soil, that the reserve fertility and future productivity of our soils must be found.

Fertility Reserve in Some Soils

A careful study of the silt minerals of some different soils, by Dr. E.R. Graham of the Department of Soils of the College of Agriculture of the University of Missouri, has given an interesting inventory of them with reference to this part of the soil body. As a soil is weathered more, or as it is older in its geological experiences, these reserve minerals consist mainly of those which are resistant to weathering, such as quartz, for example. Unfortunately, quartz contains no plant nutrients. Soils listed in Table 1 illustrate these facts.

With more rainfall and higher temperatures this reserve of silt is lower in its supply of fertility, or is higher in quartz. With less rainfall and cooler climates the soils are usually higher in minerals other than quartz, and in nutrients like calcium. Mr. Vanderford's studies of six samples of windblown soil type along the Missouri and Mississippi Rivers extending from Sioux City, Iowa, to Mississippi, contained 53, 68, 71, 73, 79, and 80 percent of quartz and .90, .60, .44, .42, and .30 percent, respectively, of calcium in the silt.

According to these data, our soils carry a calcium reserve—and possibly a corresponding reserve of other nutrients—in the silt fraction that varies widely. Our less weathered soils bid fair to carry us into the future, because they have a fertility reserve in these minerals. This reserve also represents more productivity at the present time. Silt loams, of recent windblown origin, are, for example, more productive than silt loams more weathered, because of the more liberal stock of fertility that is in the mineral and is passing on to the clay and from there on to the plant. It is in this chemical activity of exchanging nutrients within the soil that the important business of giving us soil productivity really takes place. Soil fertility must be appreciated in terms of these fundamentals and managed in accordance with them, if we are to maintain agricultural production.

The Clay and Humus Are the Seats of Active Soil Fertility

The humus of the soil has always been recognized as of great help in soil productivity. It plays a dual role. It serves, as does clay, because of its tremendous absorbing capacity. Like the clay it can take on hydrogen in trade for absorbed nutrients. It, too, can exchange its hydrogen for nutrients in the mineral crystal. In addition, however, it decays rapidly and gives up for plant use the plant nutrients of which it was originally constructed by plant growth processes. Clay does little of decay for nutrient release.

Humus has been playing the major part in productivity; it does so in these two ways of conveying as well as of providing nutrients of fertility value. Exhaustion of the humus is pulling down the fertility levels faster than anticipated. Humus is from five to 10 times as effective as clay in the activities of exchanging nutrients cations. Its depletion

(Continued on page 155)

TABLE I. Soil Inventory

Soils	Quartz %	Other Than Quartz %	Calcium %
Memphis silt loam—river bluff soil—windblown	73.9	26.1	1.57
Weldon silt loam—weathered river bluff soil—windblown	80	20	.70
Marion silt loam—much more weathered, originally windblown	79.5	20.5	.41
Putnam silt loam—prairie soil	73	27	.50
Cisne silt loam—southern Illinois	73.2	26.8	.40
Lufkin silt loam—Mississippi	87.8	12.2	.25
Clarion silt loam—Iowa	66	34	.70
Barnes silt loam—South Dakota	70	30	.90

Methods

A. M. FIELD

Selecting and Training Teachers Under the Fifth-Year Plan on a Wartime Basis

S. S. SUTHERLAND, Teacher Education, California

S. S. Sutherland

ON AN extension circular published a good many years ago, dealing with vaccinating calves for blackleg, the opening sentence read as follows: "First, catch your calf." Similarly, perhaps the most important job in the training of teachers on a wartime basis and the one that may be next to impossible to do is to get qualified trainees who are willing and able to devote a fifth year after graduation from college.

Few Available Trainees

It is quite apparent that the limited number of men available for pre-employment training will consist largely of the following groups: (1) Those who have physical defects which may render them unfit for military service, (2) Older men with dependents who may now be employed in other fields of work and who may be interested in preparing for the teaching of vocational agriculture. It is very doubtful, however, whether either of these sources offers a large enough group to meet the placement demands in any section of the country.

In the fifth-year training program itself, the following adjustments are indicated: (1) Arrange for trainees to start practice or apprentice teaching when ready. (2) Provide for the utmost flexibility in the teacher-training program. (3) Speed up the training process as much as possible without lowering training standards. (4) Shift the emphasis from pre-employment training to itinerant training and an organized program of following up newly placed trainees. (5) Adjust the content of training courses to include preparation for conducting OSYA courses and dealing with other war emergency duties of the agriculture teacher.

Year-round Training Program

In connection with the first item mentioned above, a year-round training program has been found to be practical, with trainees assigned for practice work in high-school centers as of July 1 rather than at the normal time coinciding with the beginning of the fall semester. During this summer period apprentice teachers learn thru actual experience to deal with present-day problems brought about by the war emergency in the training and supervising of student groups in the harprograms, and contacting new students.

They also have an opportunity to get first-hand experience with the present-day problems of the agriculture teacher brought about by the war emergency and centering around the shifts in emphasis in the supervised farming programs to the production of war commodities and the limitations placed on supervisory travel due to the tire shortage and gasoline rationing. In some instances apprentice teachers learn almost as much from supervising student groups in the field as they might have learned in a similar period of time meeting organized classes in the schoolroom. It is also certain that their summer work gives them a much clearer insight into the problems of the farm and the farm boy and more actual experience in doing actual farm jobs under farm situations than they ordinarily would get.

It is entirely probable that at least some of the class instruction which in the past has been given to trainees is not as necessary as we used to think it was and can either be eliminated or left for the student-teacher to pick up after he is on the job, thus leaving more time for the absolute essentials of the training program and for instruction in the added duties which the agriculture teacher has during the present emergency. Experience in doubling the assignments or at least adding to them has proved feasible and some "speed up" found to be possible.

Training on the Job

Since it is highly probable that many trainees will be placed in full time positions before the completion of their full year of training and that this condition may be the rule rather than the exception in the future, on-the-job training is quite likely to become more important in the teacher-training picture than strictly pre-employment instruction and training. Experience thus far with this shift in emphasis indicates the following may be workable procedures: (1) Arrange for teacher-training institutions to grant credit for on-the-job training where it is necessary for trainees to be placed in full-time positions before the end of the college term, and for men employed in full-time positions before completing credential requirements to register and receive credit for courses conducted or supervised by resident teacher-trainers. (2) Use a combination of supervisory visits and systematic instruction by means of printed or mimeographed materials in lieu of organized classes. A teacher-training letter sent to trainees at monthly intervals giving suggestions and methods of handling jobs which are seasonal in nature has proved to be of definite value. Supervisory visits will naturally be most notice of the visit and has had an opportunity to prepare in advance questions which he wishes to discuss with the teacher-trainer. It is necessary, of course, in connection with training of this kind to arrange for supervision and on-the-job training by resident teacher-trainers with the state supervisor and his supervisory staff. In this connection, both the teacher-trainer and the supervisor in making supervisory visits to these newly placed teachers can profit by exchanging rather complete reports of these visits.

Program Must Be Changed

There is considerable likelihood that the vocational agriculture program for the coming year and for the duration may bear little resemblance to that of the past few years, and certainly new teachers as well as old should be cognizant of this situation and trained to meet it. The war-production training programs may outweigh in emphasis and results the all-day school classes in many situations, and instruction in supervising and teaching these adult classes is a "must" in the wartime teacher-training program. The teacher of vocational agriculture is best fitted by training and by virtue of his position to act as labor co-ordinator for the school and a liaison agent between the school and the farmer in recruiting, training, and supervising high-school and junior-high-school youngsters for work in the harvest fields. The summer experience mentioned previously will aid materially in giving trainees contact with this new responsibility, which promises to be with us at least for the duration.

Another important function of agricultural teacher-trainers in wartime is to maintain, and to strengthen if possible, practice- or apprentice-teaching facilities. It is impossible to predict, but it seems probable that the postwar periods may bring greater demands for training and retraining teachers than ever before experienced. Many trainees have been taken for military service. In addition, there is reason to look forward to a greatly expanded program of vocational education in agriculture after the war requiring more teachers and perhaps better trained teachers than before Pearl Harbor. This is more than wishful thinking. Federal aid for vocational education came into being during World War I, and already educators are predicting a definite trend toward more practical education in the secondary schools of tomorrow, as a result of the showing the products of these schools are making today. Therefore, since high-school training centers may be temporarily relieved of their responsibilities toward trainees, this period might well be utilized in developing the most desirable training facilities possible in anticipation of postwar needs.

Conclusion

In conclusion, the keynote of pre-employment agriculture teacher-training for

Evaluating Education Programs

D. M. HALL, Assistant to the Dean and Director, University of Illinois

QUESTIONING students to determine their scholastic achievements has long been an educational device. Questioning the community to determine the results of educational activities has only recently come into use. But nothing is more reasonable than surveying the community in order to evaluate the results of educational programs.

Years ago a committee of school men evolved a set of educational objectives. They stated that every person should be healthy, vocationally efficient, socially acceptable, civically responsible, and have some recreational interests. They said it was the school's business to teach the facts that would accomplish these objectives.

Surveys and Program Planning

Now, after 20 years, shouldn't we undertake to measure the results? Shouldn't we determine the progress that has been made?

There are five steps to educational program planning. They are:

1. Determine and clearly state a set of acceptable working objectives.
2. Survey the problems and resources of the area.
3. Select the most important problems needing solution.
4. Co-ordinate the efforts of individuals and agencies assigned to work on these problems.
5. Measure the results.

There are two places in this scheme where a survey of the community is needed. These are suggested in Items 2 and 5.

In agricultural education the vocational objective takes prominence. Vocational agriculture is taught in the hope that it will help raise the efficiency of the farmers of the community. If, after a community has had the advantages of 10 to 20 years of agricultural teaching, its farmers are no more efficient than formerly, then vocational agriculture has failed.

Possibly a survey of certain "efficiency factors" will enable us to determine the progress that has been made. Possibly a survey of farm practices and of attitudes and opinions will assist us in evaluating the changes that have come about. A community survey is a very important device in diagnosing needs and evaluating results if properly used. At no time is it more important to know "What are the needs?" and "What are the results?" than when we enter a nationwide rural war-production program.

Must Be Valid

Surveys are worthless if not valid. They must measure what they are expected to measure if they are to be used to guide us. Consequently the first task of the surveyor is to determine valid criteria for the enterprises he wishes to evaluate.

In the area of vocational efficiency such criteria as those given below have been found satisfactory in measuring the efficiency of the farm operator.

1. Pounds of pork produced per sow in six months.
2. Eggs per hen produced per year.
3. Pounds of butterfat produced per cow per year.
4. Pounds of lamb produced per ewe per year.
5. Yield per acre of various crops.
6. Percent of crop land in legumes.

In the health area the following are given as examples:

1. Percent of persons vaccinated against smallpox.
2. Percent of school children having adequate lunches.
3. Rate of incidence of communicable diseases.

The techniques for measuring social-civic attitudes are not so well developed, but definite progress is being made in preparing tests for dependability, determination, fair play, adaptability, and sympathy. The basic social-civic traits seem to be those which make it possible for people to band together in order to increase the satisfactions of all.

Planning and Taking Surveys

Planning and taking a survey is work, but the benefits derived will be well worth the effort. Experience dictates a few practices that are important. First, it is well that a community planning committee or an advisory council become aware of the objectives, the plans, and the expected results. The council will help give the survey publicity, it will readily review the returns, and it will help make known the results to the community at large.

Second, a survey must be simple and brief. It seems better to measure only one farm enterprise at a time. The questions asked should enable one to calculate the predetermined criteria with accuracy. Many surveys have dealt with practices instead of results and these two are not necessarily the same. When measurable results have been calculated, comparisons can be made between different practices, different farmers, and different years. These enable one to determine the amount of progress made over a period of time. Third, a relatively large proportion of the farmers in the community should be surveyed; from 10 to 25 percent unless the community is small, in which case a larger sample should be taken. The farmers should be chosen at random to avoid bias in the returns. If there are any natural differences within the area, the returns should be gathered in direct proportion to the number of farms or farm-

The survey may be undertaken as a class or school project, and it is desirable to credit each student for each blank satisfactorily filled out and returned. Probably a preliminary survey should be made of the student's home farm before he attempts a survey of his neighbors. Adults who attend evening or emergency production courses can be expected to fill out a survey for their farms. Cards may be passed out at community meetings if an opportunity is given to have the survey explained. If, when the blanks have been returned, the farms are spotted on a map, the evenness of coverage can be seen. Since complete coverage is essential, the teacher should feel obliged to secure data from farms in areas shown blank on the map.

Teachers Need Help

The largest task is in making the calculations and tabulations. Teachers often need help in devising the survey forms, but they almost always need help in summarizing. To provide this help for the teachers of wartime production courses, a plan has been developed whereby the task of tabulation has been assumed by the State Board for Vocational Education in co-operation with the College of Agriculture. The writer is devoting a part of his time to the preparation of survey forms and the supervision of the calculations. Survey blanks have been prepared for the hog, beef, dairy, poultry, and sheep enterprises. These are being sent teachers of war-production training courses. A form for the machinery repair, operation, and construction course is being prepared. These data will be summarized at the beginning of the course to show what problems need to be solved. At the end of the year another survey will be taken from which the progress made can be observed.

This kind of a service may well become a permanent feature of an agricultural program as it has value in showing objectively some of the results of education.

Not all the problems connected with the analysis of the survey data have been solved, and a certain amount of experimental work will need to be done on testing the procedures and the reliability of the results. Two groups of teachers willing to experiment have undertaken to improve the surveys. Surveys become more valuable as they are repeated year after year. Trends are more easily seen and results can then be accepted with greater reliance upon their validity. Certain surveys lend themselves readily to the calculation of dividends, and an estimation of the financial value of the work being done by the teacher may be made.

bility. We have long prided ourselves in vocational agriculture on being able to adjust to meet new situations, and the present emergency challenges us to do just that. With the co-operation of teacher-training institutions and of supervisory staffs, it is entirely probable that out of the demands of the present emergency may be found new techniques which we may be able to employ with benefit after the emergency is over. Unquestionably, however, the unsolved problem in pre-employment teacher-training for the duration is that mentioned at the first of this

U. S. Census Data

United States farmers reported the value of farm implements and machinery as $3,059,266,327, compared to $3,301,654,000 in 1930.

The average dollar value of American farms was $5,518.

Ice cream and other frozen desserts annually manufactured in 2,734 United States factories are valued at $285,806,781.

Six states—Kansas, Nebraska, North Dakota, Oklahoma, South Dakota, and Vermont—lost population between 1930 and 1940. In no previous decade had

Supervised Practice

C. L. ANGERER

The Kentucky Sheep Program

W. R. TABB, Teacher Education, University of Kentucky

W. R. Tabb

THE summer of 1938 marked the beginning of a program in sheep production on a state basis conducted by vocational education in agriculture in Kentucky. Before that time all work with sheep had been on an individual department basis with little similarity of purpose or design.

A study of annual reports showed that only one boy out of every 29 enrolled in all-day vocational agriculture summarized a sheep project during the year 1937–38. It was common knowledge that many of the 196 sheep projects were rather makeshift and were perhaps making little contribution to teaching good sheep production.

Kentucky is a spring-lamb producing state and has long been known on the eastern markets for its quality "Kentucky Spring Lambs." Sheep production in the state is strictly of a farm flock nature, with few flocks exceeding 500 head. The 1940 census revealed that there were 898,422 ewes on 28,479 farms in Kentucky, or an average of about 32 ewes on one out of every nine farms in the state.

The state program was undertaken with the hope of getting more boys and young men started in the sheep enterprise and making possible a greater contribution of vocational agriculture to the sheep industry of the state.

Objectives of the Program

The general objectives of the program were to set up a sound unified plan of sheep production, work out good ways of getting boys and young men to begin and continue with sheep projects, and remove certain obstacles that had handicapped boys' work with sheep. The program called for the state supervisory and teacher-training staffs to take the initiative in rendering assistance to the departments in the following ways:

1. Setting up criteria to determine which boys and young farmers should start with sheep.
2. Outlining good ways for boys and young farmers to get started and continue with sheep in their supervised farming programs.
3. Locating desirable sources of breeding ewes and rams and assisting teachers in using these sources.
4. Providing departments with up-to-date information and statements of improved practices in sheep production.
5. Promoting and supervising fat lamb and marketing practices.
6. Working out plans for financing sheep projects.
7. Setting up and operating a means of protecting sheep projects against financial loss from death of breeding stock.

Plans for Project Work With Sheep

Criteria for determining the suitability of the home farm for sheep production and for determining the desirability of the student's getting started with sheep are gradually evolving. Many teachers are learning to decide which boys or young men should be encouraged to have sheep projects and are developing techniques for getting these boys and their parents interested.

A good pattern for getting boys and young men to start and to continue with sheep is developing out of the experiences of teachers, the staff in agricultural education, successful farmers, and extension specialists. By having the pattern as a guide, individual teachers can feel that they are doing the "right thing" and that the plan represents the best thinking of the time. At present, the general outlines of the pattern are something like this:

1. Start projects with 10 or more good young ewes and a purebred mutton-type ram.

Ewes: Crossbred yearling ewes from the range country of the Northwest. (Hampshire-Rambouillet and Hampshire-Columbia crosses have proved most satisfactory.)

Rams: Good-type purebred Southdown rams are most popular to breed to crossbred ewes.

2. Breed ewes to lamb in late January or February.

early June, weighing around 85 pounds and fat.

4. Increase scope of the project to a good-sized flock as the boy gains experience.
5. Carry on a good feeding and parasite-control program with all flocks.
6. Start a few boys, who are becoming good shepherds, with purebreds to produce breeding rams.

Securing Breeding Ewes and Rams

The agricultural education staff gives assistance to teachers of agriculture in securing breeding ewes and rams for projects by doing the following:

1. Keeping in contact with the Western ewe situation and the dealers who handle the ewes.
2. Informing the teachers of the number, breeding, quality, and price of ewes offered by the dealers.
3. Securing information from the purebred breeders of rams and ewes for sale and getting this information to the teachers.
4. Helping departments get together to place carload orders for ewes.

Fat Lamb Show Sales

Departments of vocational agriculture in the state secure approximately 5,000 crossbred yearling ewes a year for their all-day and young-farmer groups.

Three state-supervised fat lamb show sales are held in early June at Evansville, Indiana, and at Lexington and Louisville, Kentucky. These show sales are set up on a market-grade basis and are handled so as to encourage better production and marketing practices.

Lambs entered in the show sales are separated into choice, good, medium, and common grades, and are sold by grades. Awards are made on a per-head-grade basis, with twice the amount given for "choice" lambs as is given for "good" grades. This system has proved to contribute more toward encouraging better production and marketing practices than shows held on a direct competition basis.

Robert Simpson, member of the Lafayette Chapter F.F.A., with his flock of crossbred Western ewes

A new type of award was introduced at the Louisville show sale this year which gives promise of aiding the program. A grand award was given the Future Farmer who had done the best job with his sheep project during the year.

Table I summarizes the three show sales in which 172 Future Farmers from 45 departments, entering 1867 lambs, participated.

The following table shows the number of lambs entered in the show sales since the program began.

Year	Evans-ville	Lexing-ton	Louis-ville
1938	...	220	...
1939	112	391	...
1940	288	550	...
1941	544	622	...
1942	944	642	281

Sheep Protective Association

As there is no commercial insurance that boys may use to protect themselves against financial loss caused by death of breeding sheep, the Kentucky Vocational Agricultural Sheep Protective Association was set up in 1938. Many loan agencies were hesitant to lend boys funds to buy sheep without some kind of protection, as losses in Kentucky from dogs and other causes are rather high.

The association is a mutual pool in which boys deposit membership dues on their sheep by filing membership applications with the secretary-treasurer. Losses are reported to the Association when they occur. At the end of the fiscal year, payments are made to the members by prorating the membership fees collected to the losses, which may not exceed 90 percent of the protected value of the sheep.

Membership dues for the year 1942–43 are five percent of the protected value of ewes and 10 percent of the protected value of rams to protect against all losses, and three and one-half percent for ewes and seven percent for rams to protect against all losses except from dogs. Many counties have dog-protection associations, and boys are encouraged to belong to these when possible. Boys are not encouraged to belong to the state association except to protect loans. Usually a boy will belong only one year, unless he is buying additional ewes.

Table II gives a summary of the busi-

(Continued on page 157)

TABLE I. Analysis of Three Sales

Items	Choice Grade	Good Grade	Medium Grade	Common Grade	Totals and Averages
Number of lambs	474	661	577	155	1867
Percent of lambs by grades	25.4	35.4	30.9	8.3	100
Average weight per head, lbs.	85.3	80.9	73.2	66.2	78.4
Selling price per 100 lbs.	$16.50	$16.11	$15.37	$13.83	$15.83
Average dollars per head	14.08	13.03	11.25	9.15	12.42

Total value of all lambs............$23,200.39
Awards...........................$695.50
Number departments participating.......45
Number of boys participating..........172
Average number of lambs per boy........10.8

TABLE II. Business Summary

Year	Number of Boy Members	Number of Sheep Protected: Ewes	Number of Sheep Protected: Rams	Rate of Dues: Ewes	Rate of Dues: Rams	Percent of Loss Value Paid	Percent of Protected Sheep Lost
1938-39	114	2134	92	$ .40	$1.00	49.3	7.8
1939-40	75	919	53	5-3½%	10-7%	67.0	7.5
1940-41	76	956	55	"	"	78.0	6.5
1941-42	97	1301	63	"	"	90.0	5.7

The Conference Procedure in Teaching War-Production Courses

G. A. SCHMIDT, Teacher Education, Colorado State College

THE main purpose of the war production courses is to discuss and plan with producers ways and means by which the production goal can be reached in the shortest possible time and with the greatest efficiency.

Since emphasis in these courses should be centered on practices leading to more efficient and increased production of the commodity which is made the basis of instruction, everything that is done in a class not specifically contributing to these ends should be excluded. Time-consuming activities of a general nature need to be avoided if practical results are to be immediately attained in the little time given to a course.

By no means should a course be organized to cover all phases of the production and the marketing of one of the critical commodities in a general and informational way. On the other hand, the instructor should always have in mind the community practices which can be improved to secure greater or more efficient production. The instruction should, therefore, result in action on the part of each individual member of the class. This procedure definitely gears the instruction to meeting the present war needs.

The Conference Procedure

The conference procedure is recognized as one of the most desirable methods of conducting classes with adult farmers who have had considerable experience in the production of the commodity which is the basis of the instruction. To give farmers an opportunity to discuss their experiences and opinions when trying to solve a managerial problem is the purpose of the conference. The members of the group may want to decide upon the value of some practices; they may want to establish a standard way of doing something; they may want to agree upon some course of action; or they may want to correct some unsatisfactory practice. Whatever may be the immediate purpose, the collective judgment of the group on some problem is obtained thru a general discussion. To this discussion the instructor or some authoritative person may add facts that should be considered in reaching a decision.

The conference serves as an effective way for helping men to think straight on some problem or to decide upon some action. It is not concerned with the development of doing abilities, nor is it essentially concerned with imparting information. This latter statement does not mean, however, that the instructor should not add important functioning facts to the experiences and opinions which the group will consider in reaching a decision. Decisions should come from the group, however, and not from the instructor, who is essentially a leader of a discussion group and whose primary function is to guide and direct the discussions and the thinking of the group.

Conducting the Meetings

1. Begin the meetings on time and close them on time. If some members wish to remain longer to discuss some points further, this is all right, but the class should be dismissed first.

2. Before starting a meeting it is an excellent idea to write on the upper part of the blackboard in front of the group the problem made the basis of discussion of the meeting.

Doing this will greatly help in focusing and holding the attention to what was planned for the meeting. Cautiously sidetrack irrelevant discussion and controversial questions. Let those who raised them remain after the group has been dismissed if they wish to discuss them.

3. Start off by clearly explaining the problem or question. Motivate it as best you can.

4. Put your first key question to the group. These key questions are part of the instructor's preparation for the meeting.

5. Get from the group facts, experiences, or cases pertaining to the question. This assembling of facts is the *first phase* of the conference procedure.

6. Record on the blackboard, whenever practicable, in outline form, the essential functioning material presented. Add what may be needed to help out. This selection of functioning facts is the *second phase* of the conference procedure.

7. In some suitable way get an evaluation of the functioning facts. This is the

J. B. McCLELLAND

Farmer Classes

W. H. MARTIN

Randolph Young Farmers Co-operative, Inc.

M. G. VIA, Instructor, Farmville, Virginia

AT ITS October, 1937, meeting, the Randolph F.F.A. Chapter voted to make a part-time class one of its objectives for the year. Before the next meeting, visits were made by the instructor and F.F.A. members to young men in the community who they thought would be interested in such a class. The possibility of organizing a club was discussed with them.

Club Organized

In response to a written invitation from the F.F.A. Chapter to attend its November meeting, nearly every young man in the community within the age group of 14 to 35 was present. At this meeting the benefits and opportunities of such a club were discussed. Each guest present was given pencil and paper and asked to answer the following: (1) Your name? (2) Do you think it is wise to organize such a club? (3) Will you attend the meetings? (4) What are you interested in having discussed or doing? Everyone who turned in a paper wanted to organize a club. As a result of this desire the meeting was then devoted to the election of a president, vice-president, secretary, treasurer, reporter, and an advisory council.

The organization was named the Randolph Young Farmers Club. The question of dues was also decided upon, $1 being the amount for each year. Twelve dollars was collected at that time. The group set the second and fourth Thursday nights of each month as the date for the Club's meeting, except during the months of June, July, and August, when a social would be held on the second Thursday night. (These meeting dates are still observed except for call meetings.) At the conclusion of the business, refreshments were served.

Young Women Organize

The members of the Randolph Young Farmers Club, realizing that the young women of the community might profit by a similar club, set up as one of their objectives the organization of a Junior Homemakers' Club. With the co-operation of the home economics teacher, this club was soon organized to meet on the same dates as the young men's club. It has done and is continuing to do some very fine work.

The meetings of the Young Farmers Club are conducted by the officers of the club instead of by the instructor. A regular order of business is followed regardless of whether the club has an outside speaker or the instructor discusses some farming or co-operative problem with the group.

The Club has continued to grow, having at the present time approximately 70 members. It is composed mainly of a part-time class of young farmers in the Randolph community who are interested in the improvement of their farming practices, education, social, and recreational activities. The club has met regularly since its organization in 1937. At least 25 meetings are held each year. The members have been led to do co-operative purchasing and to secure quality supplies at the most reasonable cost.

Co-operative purchasing was practiced in the name of the club for some time. However, the members became concerned over the financial liability resulting from such a practice. It was explained to the group that under the laws of the state, any non-incorporated group engaged in any business activity is considered a business partnership. Under such circumstances, each member is legally liable for any debt or obligation of the group.

Organizes Co-operative

After a discussion of the amount and character of the purchasing expected to be done co-operatively, and the relatively small cost of incorporating, the group voted to incorporate as a co-operative association. The name of the club was then changed from "Randolph Young Farmers Club" to Randolph Young Farmers Co-operative, Incorporated." Directors and officers were elected, and a certificate of incorporation was adopted and signed by the incorporators.

Business in the Co-operative is done by its members. At the present time they are buying such items as fertilizer, feed, refrigerators, washing machines, vacuum cleaners, radios, stoves, farm machinery, paint, wire, roofing, nails, automobile tires, pumps, binder twine, seed, and almost any other farm and household supplies they need thru the Co-operative. With the exception of farm machinery, the Co-operative is able to buy the abovementioned items and many more wholesale. As the Co-operative buys everything directly and does not buy or store anything except when an order is placed by a member, the implement manufacturer will not give the Co-operative a dealer's agency. However, the Co-operative has a contract with two machinery dealers whereby the members can buy anything they desire for the invoice cost plus 10 percent. This gives the members a grand saving on new machinery as well as on parts.

Scope of Business

The following is an incomplete list of supplies purchased by the members co-operatively for the period covering January 1, 1942 to March 31, 1942: fertilizer, $6125; seed, $750; farm machinery (including 3 tractors); $2,625; feed, $1,430; paint, $80.17; pump, $115.75; roofing and barb wire, $189.55; twine, $55; and radio, $19.47. The Co-operative has an agency with two fertilizer companies. They also have the local agency for the Stewart Warner radios, refrigerators, and A.B.C. washing machines. All of these articles may be bought at list price, less approximately 40 percent. Feed is bought from the local mill wholesale. Seed is bought from a large wholesale house in Richmond. The club members buy items of farm machinery, such as threshing machines, combines, tractors, drills, wagons, plows, and disk harrows. Roofing, nails, wire, stoves, automobile tires, pumps, twine, etc. are purchased from a large wholesale house in Roanoke, Virginia.

To give an idea of the amount saved on such purchases thru the Co-operative, on December 3, 1941, several members wanted to buy some galvanized roofing. The lowest price they were able to obtain locally was $6 per square. The members were able to secure this same roofing from Roanoke, Virginia, for $4.05 per square less 2 percent if paid within 10 days. The freight was 22c per square.

Other Activities

Altho a great deal of co-operative buying and selling is done thru the Randolph Young Farmers Co-operative, Inc., it is far from being one of its chief aims. Its members are a great deal more interested in making their community a better place in which to live. Last summer a cream route was worked up; as a result, the local creamery collects cream from the farms twice a week. They own two very fine registered Guernsey bulls for the members to breed their cows to. One of these bulls is a grandson of a bull which a few years ago sold for $10,000, and his dam has an excellent record.

In 1939 the Club had as one of its chief objectives the introduction of electricity into the community. A house-to-house canvass was made, urging people to sign contracts for electricity. With a minimum of difficulty, the required number signed. These contracts were turned over to the Southside Electric Co-operative and 40 miles of REA lines were built in the community. In 1941 the Club built an excellent duplex telephone line thruout the entire community. This line is owned entirely by the members.

Program for 1942

This year the Club is stressing National Defense projects. It has bought a $100 defense bond, series F. All activities are directed toward aiding the Government in this emergency. Defense classes in woodworking and metalwork have been taught in the agricultural shop for the past two years, in great measure as the result of the desire of the Club members for such classes. Besides the class in

Organizing an Evening School to Meet Wartime Needs

J. R. STIERWALT, Teacher, Leon, Iowa

PROBABLY never before in the history of our country has there been greater need for a systematic educational program designed to carry information to every farmer on improved techniques or practices necessary to increase crop and livestock production. We can no longer be interested in improving the efficiency of the farm business only as a means of increasing the profits of the individual operator. We are coming to realize that total production of our major farm products must be stepped up in 1943 even more than it was this year if we, as farmers, are to do our part in protecting our country from Axis domination.

Realizing an urgent need among farmers of Decatur County for further training in improved practices, both in increasing production and in improving efficiency, the writer decided to spend a three-weeks' summer school term in research study of planning and organization procedures used in conducting evening-school classes, in an effort to improve the adult evening-school program at Leon.

The Place of Education in Increasing Production

Many of our country's better farmers for a number of years have been producing almost up to capacity and can expand output only in a limited way as price ratios improve. Hence a large part of the requested increase in farm production must come from that large group of small and medium-sized farmers whose business capacities have not been reached.

In 1939, the gross value of all farm products was below $2,000 on 52 percent of all Iowa farms. Insecurity of tenure, lack of equipment, lack of available credit, and insufficient familiarity with efficient production techniques are some of the factors largely responsible for limiting production. Some kind of technical assistance is definitely needed on a large number of Iowa farms.

Objectives of Adult Farmer Education

In deciding whether or not to organize an evening school, the vocational agriculture instructor should perhaps determine just what he could hope to accomplish in the community as a result of the school. These things can then be listed as general objectives, such as the following:

1. To assist farmers to reach wartime production goals
2. To give farmers additional information and farm skills
3. To extend the services of the high school and vocational agriculture to a larger part of the community
4. To develop an interest in the improvement of farm homes and country living
5. To improve town-country relationships
6. To improve the recreational and social functions of farm people

Later, when the course for the year is chosen, the help of the advisory council should be solicited in setting up more specific objectives for the year. These would be in terms of actual changes to be expected in class members. For instance, an evening-school course in dairying might include such specific objectives as:

1. To develop the ability to select dairy cattle for high milk production
2. To develop the ability to feed dairy cattle for most economical milk production
3. To develop the ability to control diseases and parasites of dairy cattle
4. To develop the ability to market milk and other dairy products efficiently

Use of an Advisory Council

Instructors of vocational agriculture in Iowa agree, almost without exception, that an advisory council is essential in organizing an evening school. Thirty-six of 39 schools studied by Hamlin in 1936 had advisory councils, with six as the median number. There is considerable disagreement, however, in the various schools as to the number of council members and the use that should be made of the council. It has been found that small-attendance programs had an average of only 3.1 council meetings, as compared to seven for the large-attendance programs. It has also been found that large-attendance schools had councils larger by two members or an average of eight, as compared to six, for small-attendance schools. The number of council members needed is dependent somewhat upon the size of area to be served.

Council members should be representative of the groups they are to serve. Consideration should be given to geographical distribution, ages, schooling, balance of landlords and tenants, organization affiliations, etc. In organizing an evening school for the first time, the members are ordinarily best chosen by the instructor from suggestions given by prominent businessmen, prominent farmers, the county agricultural agent, and the superintendent or principal of the school. Later they may well be elected by members of the class. Most teachers prefer a revolving membership, whereby there are each year some new members and some who have served before. In choosing the council at Leon, the writer explained the evening school at a Chamber of Commerce meeting and asked for suggestions for prospective council members. Then the county agent was asked to help narrow the list to the desired number. Each member was visited personally, and the evening-school work was explained to him, and his consent to serve was secured.

Function of the Council

The council should assist in selecting the topic for discussion and the objectives to be developed, in setting a meeting time, in selecting special features, such as outside speakers and provisions for recreation, and in securing enrollment.

Present plans are to call the council together in early August of this year in order to plan the program for the coming year. Needs for the coming school year will be discussed, and each member will be asked to list farmers in his community who might be interested in an evening school. All former members and prospective members will then be visited by the instructor and a council member to explain the school and to get ideas on topics to be discussed. Since our superintendent is interested in organizing an evening school for women, the question will be raised with the farmers visited as to whether or not their wives would like to attend similar meetings in some phase of homemaking. After the survey is completed, a later meeting of the council will be held to make final plans. The council will assist in deciding just what jobs are to be taught each evening and the proper sequence to follow. The county agent will be invited to this meeting to correlate the evening-school program with any extension meetings to be held during the winter.

Perhaps the first thing the instructor should do in preparing to teach the

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at night, a class was held all day on Friday and Saturday of each week in farm machinery repair work during the months of February, March, and April. The group that is taking advantage of this class is made up almost entirely of Club members.

In response to the Government's request that this county grow 2,000 acres of soybeans and as many peanuts as possible, the Club sponsored a meeting of the entire community. One hundred and thirty-five attended. The county agent and agricultural instructor explained the raising of these crops. The results of the meeting were most gratifying. Many who have never grown soybeans planted as many as 15 acres. This was especially gratifying because heretofore the county had produced only a very few acres of soybeans and no peanuts.

Recreation

Realizing the value of recreation in life, the Club has made provisions for

ments at all meetings, holding joint meetings with the ladies, buying a radio, organizing a basketball team, having an annual barbecue, having monthly picnics during the summer, sponsoring musical entertainments and camping trips. In 1939 the Club and F.F.A. Chapter, jointly, chartered a bus and attended the World's Fair in New York for five days.

In conclusion we would like to say that the Randolph Young Farmers Co-operative, Inc., is trying to serve its members in every way possible and has to a great extent made farming for them a pleasant and desirable occupation.

It may be interesting to note that two of the F.F.A. members of 1937 who were most active in organizing the Club are now not only members of this organization but are also very outstanding in the Future Farmers of America. They are David Walker, Jr., State President of the F.F.A., 1941–42; and Thomas Porter Scott, one of the top-ranking three American Farmers in the Southern Re-

Farm Mechanics

L. B. POLLOM

Why Not Build a Trailer?

LESTER B. POLLOM, State Supervisor, Topeka, Kansas

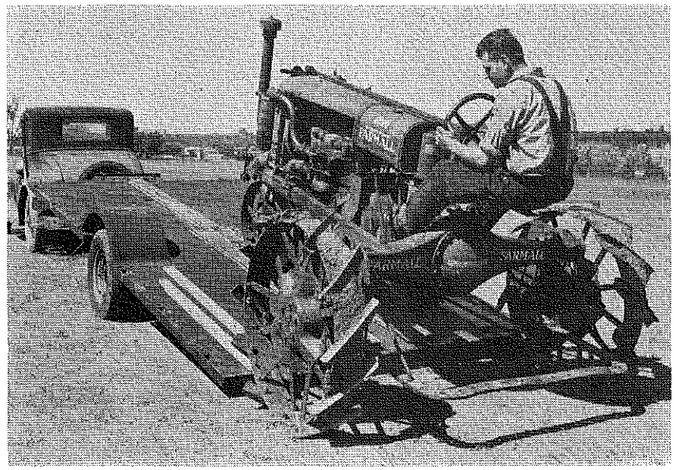
WITH the government's demands for rubber, it is not possible for the farmer to equip his implements economically with rubber tires. Walter Porter, Council Grove, Kansas, solved this problem by building a trailer. He has found it to be of great value in his farming operations.

Porter, as part of his college undergraduate training in farm mechanics, constructed his trailer at Kansas State College under the supervision of J. W. Miller, Assistant Professor of Shop Practice, Kansas State College, Manhattan.

The total cost of the trailer was $35. This includes dual wheels, tires, tubes, frame, flooring, axle, bolts, and welding. A total of 90 man hours was spent in building the trailer.

Used Junk Material

Nearly all the material was bought from junk dealers. The complete list of materials include a truck frame such as those found on International or Diamond T, a model T Ford frame, a bus or truck front axle, four 16-inch Ford or Chevrolet wheels, four 6:00–16 used tires and tubes, one set of rear truck springs, and used boxcar flooring or other suitable material for the bed. Unless good used bolts are available, it is advisable to buy new ones.



Walter Porter making use of his trailer

Procedure for Construction

The actual construction, with the exception of the welding, can be done by any boy in vocational agriculture or by

It is best to start construction with the frame.

Remove the spring shackles and move them forward until the springs are in the center of the axle and fasten the tie rod to it with a U bolt. This affords a means of aligning the wheels in relation to the trailer as well as to each other.

The dual-wheeled construction is brought about by fastening two wheels to the hub and the other two to the brake drums. Dual wheels are better than ordinary two-wheel or four-wheel type of construction in that they permit the hauling of as large a load as the four-wheeled trailer, with the same ease of handling as the two-wheeled trailer.

The hitch is made from the model T Ford frame which is attached in such a way that it is hinged on the trailer frame about five feet back from the front end. This facilitates loading of tractors or other equipment without unhitching the trailer from the car or truck. The hitch should be well braced and long enough to permit the trailer to be handled easily.

The bed of the trailer is bolted directly to the frame with three-inch carriage bolts and is eight by sixteen feet in size. Angle iron is then bolted around the edge of the floor so that the weight will be distributed to several boards instead of being concentrated on the board on which the load is resting.

Fenders may or may not be used on this type of trailer, depending upon the piece of lightweight boiler plating wide enough to cover the wheels will be very satisfactory.

A small winch can be mounted on the front to aid in loading.

A few simple points which if remembered will add many years to the life of the trailer and any implements on the farm, are: Keep implements in good repair and well painted, and, above all, provide some means for storage when they are not in use.

A copy of the blueprints used in making the trailer may be procured by writing the author of this article.

Establishment in Farming—Its Future

C. L. KUTIL, Instructor, Antioch, Illinois

THE war can play many unsuspected tricks in the game played by vocational agriculture in establishing young men in farming.

I can take you along our main highways leading from our town and point out to you a dozen well-kept and well-managed farms operated by young farmers who have graduated from our local vocational agriculture department. These fellows are older, have a family, are well established in a farming business, and thus far have not been affected by the war to any appreciable extent. They are good farmers, interested in farm organizations, and taking an active interest in community affairs. We are all proud of them.

Young Men Go to War

However, on the other hand, our younger and more recent graduates are rapidly being absorbed into our nation's armed forces. Being younger and unmarried, they are anxious to try out their wings, as it were, to see what the world has to offer in the way of adventure. Many young high-school graduates who have carried on fine projects and established themselves in farming operations are now disposing of their enterprises and entering our fighting forces.

No matter how long the war may last or how strenuously we may pursue it, many of our young men will return to engage in peaceful occupations. Many of them will return to the farm and be only too glad to do so. It has always been thus in times that followed other wars.

This is no time for vocational agriculture teachers to feel any discouragement, rather it is a time to do a better job with the present high-school student so that we may leave a stronger imprint on his mind. All along he will then nurture a greater love for country life and when peace comes again, we will find him back, establishing himself on the land.

So, vocational agriculture teachers, do not despair—keep up the good work. Let's

Organizing Evening School

(Continued from page 151)

course is to review all up-to-date subject matter in the field of the course. He should have experimental results and farmer experience data to present. He will need sufficient time to collect or arrange for teaching materials in the way of charts, motion pictures, etc., and to order bulletins for members. Arrangements will have to be made for outside speakers if any are to be used. Publicity regarding proposed meetings will need to be provided thru council members and local newspapers.

Conducting the Class

The most accepted method of conducting the class is by the conference or discussion method. Farmers prefer this over the lecture type for several reasons. Each member is given an opportunity to relate his own experience or belief on the subject being discussed and to benefit by the experience of others. Members may bring up questions or problems which the teacher may have overlooked or not have considered as a problem. The variety of opinions which are included keeps the procedure interesting and thought-provoking.

A procedure somewhat like the following suggested by H. N. Hansucker in the *Agricultural Education Magazine*, October, 1940, may well be followed: First, secure from the members their problems relating to the job under discussion. These are listed on the blackboard. Second, the teacher, acting as discussion leader, guides the members thru channels of straight thinking on the problems to reach definite conclusions. Third, the conclusions should be listed on the blackboard, later mimeographed, and copies distributed.

The instructor, in preparing for the evening's meeting, should have visual aids, experimental data, and farmer experiences which can be used to aid in reaching the right conclusions. He will need a supply of thought questions which may be raised whenever the discussion lags. Most often the farmers will keep the discussion going and will supply plenty of questions, but the list should be handy for an emergency.

Demonstrations, tours, and outside specialists may occasionally supplement the regular discussions. Several teachers of evening school are finding that a prearranged panel group used occasionally adds variety to the classes.

Special thought and preparation need to be given to the first meeting of the class. At this session, the general problem for the year is outlined and the nature of evening-school work explained. Sam Dobervich of Lake City uses at the first meeting a check sheet on which he asks farmers to mark the approved practices they follow. These are used as a basis for discussion in later meetings.

However, most farmers come to the first meeting, like any other, to get basic information and not merely to hear about what they might be able to learn in later meetings. Therefore, a definite problem should be taken up, discussed, and conclusions drawn.

Before closing any meeting the problem for the following week should be announced and to give each member a desire to return. Bulletins or mimeographed material on the subject may be handed out at the close of the meetings. All meetings should be opened and closed on time.

Recreation

Authorities are not altogether in strict agreement upon providing recreational activities. This may be left up to the council to decide. It has been the experience of the writer that discussion over cups of coffee and sandwiches following the class brings out points missed earlier and aids in getting the group acquainted. Many instructors use some kind of banquet to close the series, at which time diplomas or certificates of attendance are presented to those members attending a large percent of the meetings.

Follow-up of Approved Practices

An excellent measure of the value of an adult evening-school class is the improvement of practices carried out on the farms of the members. When drawing conclusions to each evening's topic, the teacher should list on the board any approved practices pertaining to the subject which farmers may use on their home farms. These should also be included in the mimeographed reports of the meeting.

Before the close of the series, the instructor should have each member check the practices which he plans to put into operation as a result of the school. It is then the responsibility of the instructor to visit each member personally and assist him in any way possible to carry out these practices. It should be made clear to the group that they are entitled to any service which the instructor can give them and that they should feel free to call upon him at any time.

Summary

Because of the urgent need for increasing both the amount and efficiency of production of farm products, it seems that a comprehensive educational program is necessary to carry to each and every farmer information on new and improved farming methods.

A large number of farmers may be expected to respond to the evennig school if the following organization and management practices are followed:

1. The use of a large and active advisory council
2. Early and definite enrollment of members
3. Early and adequate planning
4. Provision for class meetings at times of the year when weather and road conditions do not interfere
5. Use of unified course taught by the conference or discussion method
6. Extensive farm visitation by the instructor to supervise improved practices
7. Provision of social and recreational activities to supplement class work

An Individual Program for the Farm-Shop Student

R. J. WOODIN, Supervising Teacher, Department of Agricultural Education, Ohio State University

"I MADE over $100 on my farming program in my freshman year. I'll use at least $50 of this money for materials for farm shop this fall." So spoke Louis Fluck last August. Louis was about to start his second year of vocational agriculture at Hilliards High School. His statements raised two questions. First, what could he do for himself in farm shop which would better justify a $50 investment than expanding his farming program? Second, how had he developed this desirable attitude toward farm-shop work? In all too few cases in the writer's experience have farm-shop students had such an attitude toward the course.

The Ohio Plan

Under the Ohio plan, farm shop is one of five courses given in a four-year high-school vocational agriculture curriculum. Since the aim of this whole program is the establishment of boys in farming, the farm-shop course needs to be planned with this aim in view. Careful planning on the part of student, parent, and teacher is implied if the farm-shop course is to be of its maximum value in establishing boys in farming. From such planning boys, parents, and teachers can develop a program for the boy which will make his year's work most effective. In this time of national emergency when teachers may make a real contribution to the Food for Victory program, maximum use must be made of shop facilities. The he must develop boys toward establishment in farming; second, he must help farmers to meet the farm machinery and farm labor shortage. Well-planned programs for each boy give a teacher the opportunity to be of maximum service to his boys and his community.

Begin Program the First Year

Before a boy comes to the first meeting of the farm-shop class he should have started thinking about his year's work. The vocational agriculture teacher has an opportunity to help boys to appreciate the value of farm-shop work during the boys' freshman year in the Agriculture I and II class.

If the shop adjoins the classroom, an opportunity for teaching arises weekly as the members of the shop class complete projects which will help make their farming programs more profitable. A five-minute trip to the shop to inspect a newly completed hog feeder might easily be justified as a relief measure for a class which might otherwise sit still for a 90-minute period. Such a visit gives the boy-builder an added sense of accomplishment. More important, it may make John Doe, freshman, say to himself, "I'm going to make a hog feeder like that next year," or "If Bill can do it, I can," or "There's a chance to save $10 over buying a feeder," or "I'll bet I could produce a ton-litter next year with a self-feeder like that."

Future Farmers of America

A. W. TENNEY

What Are the F.F.A. War Aims?

J. F. HIGGINS, Teacher, Ft. Meade, Florida

WHAT can the F.F.A. do to help win the war? That has been a question of major importance to most of our many F.F.A. chapters thruout the nation. Many suggestions have been made, and many efforts have been put forth with gratifying results.

In order to do its part and to have a worth-while report on war efforts, the F.F.A. Chapter at Fort Meade, Florida, has greatly stimulated activity among its members thru the use of a large chart that sets up the war objectives in table form and shows the accomplishments of each chapter member.

The heading shown below was used for a chart which was well filled with worth-while accomplishments from the Chapter.

F.F.A. Individual War Accomplishments

Name of Pupil	Home War Garden Scope—Varieties	War Defense Crops (Peanuts, Tomatoes, Cabbage, etc.) Kind—Scope	Defense Livestock Kind—Scope	Farm Machinery Constructed & Repaired Kind—Extent	Food Conserved (Canned, Pickled, Preserved, Dried, or Stored)	Salvage Effort Bags, Metal, Foil, Rubber, etc. Kind—Quantity	Miscellaneous (1st Aid Training, Military Drill, Air Watchers, Aux. Firemen, etc.)	Purchase of Stamps and Bonds Kind and Total Value

Taking the first boy on the table, not because of any outstanding effort in his chapter, but because his record shows a fair average distribution of war work done, I give his record between March and June 30, 1942.

The boy, L. A. Devane, Jr., a third-year agricultural student from a small truck farm, had the following entries:

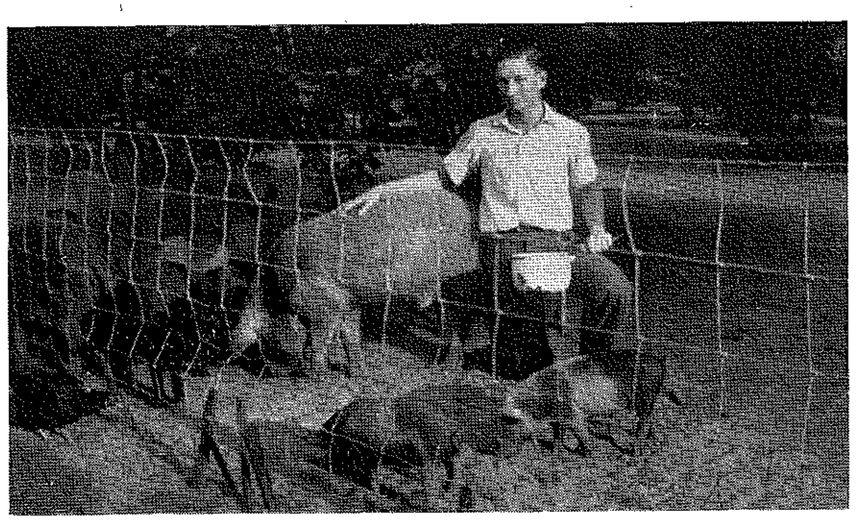
A. War garden: one-half A. which included green corn, tomatoes, okra, lettuce, squash, pepper, collards, and cow peas (all canned or used at home).
B. Defense commercial crops: tomatoes two and one-half A., peanuts one and one-half A., cabbage one-half A., feed corn 10 A., and sweet potatoes one-half A.
C. Livestock increase over last year: hogs four head, chickens 40, dairy calves two, and one milk cow.
D. Farm machinery repaired: one tractor repaired, one truck body repaired, made hickory ax handle, built trailer body.
E. Food conservation (pupil doing part berries, canned 45 cans string beans, pickled 25 quarts cucumber pickles, canned 50 cans tomatoes, canned 50 cans cow peas.
F. Salvage activities: Collected and saved 25 burlap bags, collected and sold scrap metal.
G. Miscellaneous: Took 20-hour course in First Aid, took half-hour military drill each day.
H. Bonds or stamps: Purchased one dollar's worth of War Savings Stamps.

In addition to the chart on which the individual war efforts are recorded, the chapter has set up several important items in its annual program that will, when carried out, aid in furthering the war accomplishments.

In the front of the chapter hall, there is a large plywood race track with 30 or more small wooden horses that move up a measured length with each War Stamp or Bond bought by the boy whose name is placed at the beginning of the line on which his horse runs.

The chapter also has a sealed wooden box called "Uncle Sam" in which pennies are placed when collected from boys as fines at F.F.A. meetings. The fines are charged for absent members and for tardy members. The pennies are to be used for War Stamps purchased by the F.F.A. Chapter.

Many other chapters have their own methods of pushing the war program, and in general it can be said that the Future Farmers are not slackers.



Future Farmers produce hogs for Victory

Public Relations, or Informing the Public

FRED D. TRAMMELL, Adviser, Bagdad, Kentucky

PRIVATE businesses lose no opportunity to inform the public about services and materials they sell. The necessity for their keeping the public sympathetic toward their products is today greater than formerly. Moreover, private businesses keep their stockholders continually informed on the status of their holdings. Not to do so would arouse suspicion and fear.

In the matter of public relationship in vocational agriculture we may well take some lessons from private businesses. As a group, teachers of vocational agriculture have not seen the necessity for keeping the public informed, nor are our methods as effective as those of private businesses. Too many teachers of vocational agriculture think they are too busy for this detail. More unfortunate still, perhaps, a few teachers possess too much of the "public-be-shunned" attitude. Either of these reasons, of course, is inexcusable. The need for publicity is just as great in education as it is in private business. The people are the stockholders in our public schools. They pay the taxes and reap the good that our system of education brings. Why not, then, keep the public regularly and systematically informed about what we are doing?

The public always welcomes *information* concerning what we are doing for the good of the community. One of the chief requisites of a good department of vocational agriculture is that the department, the home, and the community work together for the benefit of all. This co-operation cannot be expected unless the public knows the purposes, the methods, and the accomplishments of our work. The writer has yet to see a local person who does not support the vocational educational program if he has a knowledge of what vocational agriculture is.

The purpose, therefore, of giving our work publicity is to keep the public thoroly and constantly informed concerning the aims, the needs, and our accomplishments. Understanding is the basis of confidence.

Organization of the Information

The information service should be definitely organized. Perhaps it is best for the teacher of agriculture to shift most of this responsibility to the Future Farmer chapter. Here in Kentucky, we like the "Information Committee" plan. A committee of three, four, or five is appointed by the president to take charge of information activities. The chapter reporter may head this committee; he should at least be on the committee. The teacher of agriculture should carefully read all articles before they are sent to press. He should work with the committee but not dictate to it. Most Future Farmers will understand the significance of proper information and will strive to do a good job.

Of the many ways of informing the public, a few successful ones that have been used by the Bagdad Chapter are:

1. Furnish local papers an article each week.
2. Work with a reporter on four or five success stories each year for state papers.
3. Send articles to editors of state mag-
4. Publish newsletters each six weeks and send to all families in the school district.
5. Display chapter scrapbook in local business places.
6. Lose no opportunity in providing programs for local civic clubs, P.T.A., school assembly, and the like.
7. Prepare one or two radio programs each year.
8. Display chapter trophies attractively.
9. Take and display pictures of F.F.A. members that tell the story of our work. (This is more important than generally thought.)
10. Supply members with project markers, windshield stickers, and membership cards.
11. Erect F.F.A. signs near the school on all the main highways.
12. Have a program and then talk about vocational agriculture and F.F.A.

The Kentucky Sheep Program

(Continued from page 149)

ness of the association for the past few years.

Financing Sheep Projects

Many teachers of agriculture in Kentucky work on the assumption that a boy can finance any supervised farming program he ought to have. Sheep projects present relatively few problems of financing. A boy can normally expect to have sufficient cash sales from wool and lambs to liquidate his loan for breeding stock in 12 months. Because of the ability of sheep projects to pay out in a short time and the protection against losses, departments with sheep programs have little difficulty in securing credit.

Arrangements have been worked out on a state basis for financing thru group PCA loans. Individual departments have worked out ways to finance thru local banks. In several communities service clubs underwrite boys' notes for sheep loans thru local banks.

Boys are encouraged to finance their sheep projects thru regular farmer-credit channels. In this way they can get sounder financing, learn good financing, and have a better chance of owning stock when the loans are paid off than when they secure financial assistance from their parents.

Table III gives data, from annual reports, which reveal certain changes that have taken place during the past five years with the sheep projects of all-day boys. Teachers' annual reports are one year behind in reporting sheep projects summarized, as the reports are made June 1 and few sheep projects started the previous year can be summarized by June 1 because the lambs are not sold by that time.

Evaluation of the Program

While no elaborate attempt has been made to evaluate the program, certain general conclusions can be drawn:

1. Approximately 100 of the 256 departments pattern their sheep program along the lines of the state program and make use of some of the help provided by the state staff.
2. The teachers who have participated in the program believe it is a great improvement over the old system of every-one for himself.
3. The number of sheep projects summarized has increased 185 percent since 1938.
4. The percent of the total enrollment of all-day boys summarizing sheep projects has increased 97 percent since 1938.
5. The average number of ewes per project has increased 25 percent.
6. Death losses have decreased 27 percent in the sheep protective association.
7. Participation in the lamb show sales has increased each year, indicating that more lambs are ready for market by early June.
8. A new teacher in a department with a going sheep program can more easily carry on.
9. In general, the teachers of agriculture and the state staff believe they are on the right track and hope to continue to improve the program.

TABLE III

Year	Number of Projects	Number of Ewes in Projects	Average Number of Ewes Per Project	Total Pupils' Labor Earnings	Percent of All Boys Enrolled in Voc. Agr.
1938	196	1958	10	$16,234	3.2
1939	276	3036	11	14,890	3.8
1940	411	4993	12	26,936	5.2
1941	451	5236	12	33,200	5.0
1942	557	6940	12.5	56,525	6.3

Conference Procedure

(Continued from page 149)

third phase of the procedure.

8. Get from group members suggestions as to a solution or decision; and if essential, get majority opinion. This is the *fourth phase* of the procedure. The development of a plan and the execution of a plan, the *fifth* and *sixth phases*, are individual matters, and are generally done outside of the meetings of the conference.
9. In a similar way try to bring the group to a decision in the other vital questions brought up in a meeting.
10. Before closing a meeting, summarize the important questions that were discussed and the things agreed upon as a basis for action.

The man who actually tills the soil is the man who is the foundation of our whole structure and, if the life of the community is such as to eliminate him, all the rest of the community will in the end pay for his elimination.—Theodore Roosevelt.

Development and Operation of the Farm Shop

ALVIN KLINE, Teacher, Bridgewater, Virginia

THE first essential in establishing a successful agricultural shop is to sense the need for such a shop and to visualize its usefulness in the community. In many rural communities the agricultural shop is the only thing of its kind in the community. The old blacksmith shop has all but disappeared from many roadsides and a garage has taken its place. Consequently, the farmer's repair needs have been pushed into second place and often he is without any facilities at all.

Organization of the Shop

The Bridgewater agricultural shop is used by the following groups: (1) Vocational agriculture classes; (2) boys from fifth, sixth, seventh grades; (3) junior farmers, and (4) National Defense class. To a limited extent the lower grade and the Home Economics Department make use of the shop. Short courses for the latter group are sometimes arranged.

First, an inventory was taken of the shop plant, which included:

1. Building—its size, lighting, heating
2. Hand tools and their arrangement
3. Power tools
4. Other equipment
5. Plan and arrangement of entire plant
6. Teaching aids

Following the inventory, improvements were planned and carried out. Materials stored in the shop were cleared out. The building, 21 feet by 50 feet, is small at best and every foot of space must be utilized to the best advantage. A partition was torn out and arrangements made to store part of the lumber overhead. A larger stove was installed to improve the heating of the building and the room was wired for light and power.

Equipping the Shop

Hand tools have been added from year to year until we have about all that are needed. To purchase these tools, the County School Board has appropriated sums from $50 to $150 per year for this purpose. Also $400 worth of tools were added for the National Defense classes.

Power tools have been added slowly, as it is felt that they are secondary in importance to hand tools. Such equipment includes a power grinder, a rip and cut off saw, jig saw, and jointer.

Other equipment added are saw horses, worktables, and cabinets.

The tools and equipment are arranged with the following in mind: best utilization of space, convenience, lighting, safety.

The hand tools are stored in a small tool room and secured on the walls, each tool having its designated place. Teaching aids include a good assortment of shop books, manuals, bulletins, charts, shop job sheets, and articles used as patterns. Also prepared lists of shop jobs and skills are included in the student's printed notebook.

Each agriculture student enrolls for two hours of shop per week. If, because he may enroll for four hours the succeeding year.

At the beginning of the year each boy makes an inventory of shop jobs he may do, using his home farm needs as a guide. When a boy enters the shop for the first time he is permitted to begin making some articles at once. Long, tiresome discussions are avoided and the skills and processes are learned by doing. He is taught to make and use a shop job sheet. He is also permitted to use prepared job sheets and plans found in publications. Special skills are taught by the instructor and experienced students. As a student learns a skill his work is observed and checked by the instructor.

Studying Shop Needs During Summer

On farm visits during the summer, the alert teacher finds opportunities for further planning. Attention may be called to the need for another individual hog house, for a range pullet feeder, for a new gate. At this time parents, as well as boys, should be thinking about opportunities for building and repairing farm equipment. Some discussion of costs should be made when the opportunity arises. Savings in building and repairing equipment should be emphasized.

Relation of Shop and Other Courses

The first meeting of the shop class provides an opportunity for the teacher to develop further appreciation on the part of his boys for the part farm mechanics can play in establishing boys in farming. Ohio teachers have available an excellent chart prepared by Dr. W. F. Stewart of the Department of Agricultural Education, The Ohio State University, which graphically shows the relationship of the courses in vocational agriculture and the supervised farming program in establishing boys in farming. Farm boys can be led to see that the farm-shop course offers these opportunities which are suggested by A. C. Kennedy, Farm-Shop Instructor of the Department of Agricultural Engineering at The Ohio State University:

1. To make a boy's farming program more profitable
   a. By making equipment which leads to more efficiency in production of crops and livestock. *Examples:* swine self-feeder, electric lamb brooder
   b. By saving money thru building and repairing farm equipment. cost of $1.10 would cost $3.50 if purchased ready-made
2. To develop abilities and skills which are necessary to establishment in farming in our mechanized agriculture era
3. To help make the home farm business more profitable
4. To help make the farm home more attractive
5. To develop a farm shop on the home farm
6. To develop in the boy attitudes and ideals which will result in a well-kept, good, modern farm, farm buildings, and farm equipment

During this discussion the teacher can use to good advantage his experience with other shop classes. He might say, "I notice from George's record on his swine project that he produced 1,820 pounds of pork per sow from his three sows last year. Some credit for his efficiency is probably due to the two self-feeders and pig creeps he built last year. This added efficiency this year increased his labor income $100." He might add, "Here is a plan for an electric brooder that Wilmer built last year at a cost of $6. Wilmer says he saved at least $10 by building it here in shop." A field trip to visit a farm shop on a near-by farm at this time is another way boys may be shown their opportunities in the field of farm mechanics. Snapshots of boys' shop projects in past years may be used to show boys what others have been able to do.

It is important at this time that boys have information on the cost of projects they are considering and some idea of the time required to build the project.

With all of these facts in mind the boy is ready to plan a year's program of work in farm mechanics. The form presented here has been a help in getting boys to see all of the parts of a shop program in their relation to each other. It is also an aid in bringing to their parents information they need to help them to co-operate most effectively with the students and teacher.

Secure Co-operation of Parents

After the boys have made out a plan of work for the year, several boys' plans are discussed in class and revised as needed. The plan is then taken home for suggestions from parents. Usually about a two-weeks period is needed during which the teacher should discuss the plan with parents and boys on his farm visits.

When the plan is returned, it is kept in an individual folder in the farm shop room. Reference may be made to the plan easily and quickly as the need arises.

Let us return again to the case of a boy who wanted to invest $50 in a shop program. His farming program as a sophomore included three sows and litters, raising 200 pullets, eight acres of soybeans, and keeping a farm account. He was able to rebuild a brooder house, to build two self-feeders for his hogs, to build two mash feeders for the laying flock, and to sharpen small tools and replace several tool handles. He had little help from other boys in the class. Louis believes his $50 investment is one of the best he could have made toward becoming established in farming. Without a careful plan he would probably have ac-

An Individual Program

(Continued from page 153)

There are many opportunities to refer to the work of the farm-shop class in teaching other high-school classes. The remark made while discussing chick brooding, "Jack made an electric brooder from this plan last year," takes but a moment. It may start several boys thinking of building their own brooders next year.

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d—Walter F. Dexter, Sacramento
d—Julian A. McPhee, San Luis Obispo
s—E. W. Everett, San Luis Obispo
rs—B. R. Denbigh, Los Angeles
rs—Howard F. Chappell, Sacramento
rs—B. J. McMahon, San Luis Obispo
rs—A. G. Rinn, San Luis Obispo
rs—Weir Fetters, San Luis Obispo
rs—Harold O. Wilson, San Luis Obispo
t—S. S. Sutherland, Sacramento
it—George P. Couper, San Luis Obispo
it—J. I. Thompson, San Luis Obispo
rt—C. O. McCorkle, San Luis Obispo

COLORADO
d—H. A. Tiemann, Denver
s—L. R. Davies, Denver
Alfred R. Banger
t—G. A. Schmidt, Fort Collins
rt—Gilbert Betts, Fort Collins

CONNECTICUT
d—A. S. Boynton, Hartford
s—R. L. Hahn, Hartford
t—C. B. Gentry, Storrs

DELAWARE
d-t—R. W. Heim, Newark
s—P. M. Hodgson, Dover

FLORIDA
d—Colin English, Tallahassee
s—J. F. Williams, Jr., Tallahassee
t—E. W. Garris, Gainesville
t—A. W. Tenney, Gainesville
it—H. E. Wood, Gainesville
it—W. T. Loften, Gainesville
ct—L. A. Marshall, Tallahassee
ct—C. W. Conoly, Tallahassee

GEORGIA
d—M. D. Mobley, Atlanta
s—T. G. Walters, Atlanta
ds—George I. Martin, Tifton
ds—C. M. Reed, Carrolton
ds—J. N. Baker, Swainsboro
ds—J. H. Mitchell, Athens
cs—Alva Tabor, Fort Valley
t—John T. Wheeler, Athens
t—O. C. Aderhold, Athens
t—A. O. Duncan, Athens
t—R. H. Tolbert, Athens

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d-s—W. W. Beers, Honolulu, T. H.
s—W. H. Coulter, Waipahu, Oahu, T. H.
t—F. E. Armstrong, Honolulu, T. H.

IDAHO
d-s—William Kerr, Boise
s—Stanley S. Richardson, Boise
s—Elmer N. Belnap, Idaho Falls
t—H. E. Lattig, Moscow
t—H. A. Winner, Moscow
Carl Hennings, Weiser

ILLINOIS
d—J. E. Hill, Springfield
s—L. C. Cannon, Springfield
s—B. A. Tomlin, Springfield
s—D. G. Daniels
t—H. M. Hamlin, Urbana
t—Melvin Henderson, Urbana

INDIANA
d—Clement T. Malan, Indianapolis
s—Harry F. Ainsworth, Indianapolis
t—B. C. Lawson, Lafayette
rt—S. S. Cromer, Lafayette
it—K. W. Kiltz, Lafayette
it—H. W. Leonard, Lafayette
it—I. G. Morrison, Lafayette
it—H. B. Taylor, Lafayette
it—W. A. Williams, Lafayette

IOWA
d—F. E. Moore, Des Moines
s—H. T. Hall, Des Moines
s—R. A. Towne, Des Moines
t—Barton Morgan, Ames
t—John B. McClelland, Ames
t—J. A. Starrak, Ames
t—T. E. Sexauer, Ames
t—A. H. Hausrath, Ames

KANSAS
d—C. M. Miller, Topeka
s—L. B. Pollom, Topeka
t—C. V. Williams, Manhattan
t—A. P. Davidson, Manhattan
t—M. R. Wilson, Manhattan
it—L. F. Hall, Manhattan

KENTUCKY
d-s—R. H. Woods, Frankfort
s—E. P. Hilton, Frankfort
t—Carsie Hammonds, Lexington
it—Watson Armstrong, Lexington
it—W. L. Tabb, Lexington
ct—J. J. Mark, Frankfort

LOUISIANA
d—John E. Coxe, Baton Rouge
s—S. M. Jackson, Baton Rouge
ds—A. Larriviere, Baton Rouge
ds—T. E. Kirklin, Baton Rouge
t—R. L. Davenport, University
t—J. C. Floyd, University
t—C. L. Mondart, University
ct—M. J. Clark, Scotlandville
ct—E. C. Wright, Scotlandville

MAINE
d—Austin Alden, Orono
s-t—Herbert S. Hill, Orono
s-t—Wallace H. Elliott, Orono

MARYLAND
d—John J. Seidel, Baltimore
s-t—H. F. Cotterman, College Park
ct—J. A. Oliver, Princess Anne

MASSACHUSETTS
d—Robert O. Small, Boston
s—John G. Galvin, Boston
t—F. E. Heald, Amherst
t—W. S. Wells, Amherst

MICHIGAN
d—George H. Fern, Lansing
s—Harry E. Nesman, Lansing
s—Luke H. Kelley, Lansing
s—Raymond M. Clark, Lansing
t—H. M. Byram, East Lansing
t—G. P. Deyoe, East Lansing
t—G. C. Cook, East Lansing

MINNESOTA
d—Harry C. Schmid
s—Leo L. Knuti, St. Paul
s—Harry J. Peterson, St. Paul
rs—Felix Nylund, Virginia
t—A. M. Field, St. Paul
t—G. F. Ekstrom, St. Paul

MISSISSIPPI
d—H. E. Mauldin, Jr., Jackson
s—A. P. Fatherree, Jackson
ds—R. H. Fisackerly, Jackson
ds—E. E. Gross, Hattiesburg
t—V. G. Martin, State College
t—N. E. Wilson, State College
t—D. W. Skelton, State College
t—A. E. Strain, State College
rt—H. O. West, State College
it—V. F. Winstead, State College
ct—W. A. Plowers, Alcorn
ct—A. D. Fobbs, Alcorn
ct—Robert Ross, Alcorn

MISSOURI
d—Lloyd W. King, Jefferson City
s—O. A. Woodruff, Jefferson City
s—M. D. Thomas, Jefferson City
s—Joe Duck, Jefferson City

MONTANA
d—Ralph Kenck, Bozeman
s—A. W. Johnson, Bozeman
s—H. R. Rodeberg, Bozeman
t—R. H. Palmer, Bozeman

NEBRASKA
d—Sidney Owen, Lincoln
s—L. D. Clements, Lincoln
s—H. W. Deems, Lincoln
t—H. E. Bradford, Lincoln
t—C. C. Minteer, Lincoln

NEVADA
d-s—R. B. Jeppson, Carson City
t—W. C. Higgins, Reno

NEW HAMPSHIRE
d—Walter M. May, Concord
s-t—Earl H. Little, Concord

NEW JERSEY
d—John A. McCarthy, Trenton
s-t—H. O. Sampson, New Brunswick
s-t—E. V. Bearer, New Brunswick
t—O. E. Kiser, New Brunswick

NEW MEXICO
s—Frank E. Wimberly, State College
t—Carl G. Howard, State College

NEW YORK
d—Oakley Furney, Albany
s—A. K. Getman, Albany
s—W. J. Weaver, Albany
s—R. C. S. Sutliff, Albany
s—J. W. Hatch, Buffalo
t—R. M. Steward, Ithaca
t—E. R. Hoskins, Ithaca
t—W. A. Smith, Ithaca
t—Roy A. Olney, Ithaca

NORTH CAROLINA
d—T. E. Browne, Raleigh
s—Roy H. Thomas, Raleigh
ds—R. J. Peeler, Raleigh
ds—E. N. Meekins, Raleigh
ds—J. M. Osteen, Rockingham
ds—T. H. Stafford, Asheville
ds—A. L. Teachey, Pleasant Garden
ct—S. B. Simmons, Greensboro
t—Leon E. Cook, Raleigh
t—L. O. Armstrong, Raleigh
t—J. K. Coggin, Raleigh

NORTH DAKOTA
d—Edward Erickson, Grand Forks
s-t—Ernest L. DeAlton, Fargo
s-t—Shubel D. Owen, Fargo

OHIO
s—Ralph A. Howard, Columbus
s—W. G. Weiler, Columbus
s—E. O. Bolender, Columbus
t—W. F. Stewart, Columbus
t—H. G. Kenestrick, Columbus
t—C. E. Rhoad, Columbus
rt—Ray Fife, Columbus

OKLAHOMA
d—J. B. Perky, Stillwater
s—Bonnie Nicholson, Stillwater
ds—W. R. Felton, Stillwater
ds—S. M. Crosnoe, Stillwater
ds—Roy Craig, Stillwater
ds—Edd Lemons, Stillwater
t—D. C. McIntosh, Stillwater
t—Don M. Orr, Stillwater
t—Chris White, Stillwater
it—C. L. Angerer, Stillwater
ct—D. C. Jones, Langston

OREGON
d—O. I. Paulson, Salem
s—Earl R. Cooley, Salem
s—Ralph L. Morgan, Salem
Kirby E. Brumfield, Salem
t—H. H. Gibson

PENNSYLVANIA
d—Paul L. Cressman, Harrisburg
s—H. C. Fetterolf, Harrisburg
s—V. A. Martin, Harrisburg
rs—R. C. Lighter, Gettysburg
rs—J. S. Champion, Pittsburgh
rs—A. B. Young, Kittanning
rs—A. V. Townsend, Bedford
rs—E. W. Wood, Towanda
rs—W. J. Tucker, Bellefonte
rs—Norman Rachford, West Chester
rs—J. Rex Haver, Lock Haven
rs—Harry Everett, Bloomsburg
rs—D. L. Crum, Meadville
rs—Harold Park, Carlisle
rs—C. J. Kell, Harrisburg
rs—B. E. Decker, Erie
rs—J. D. Martz, Jr., Indiana
rs—F. C. Bunnell, Brookville
rs—H. E. Newcomer, Scranton
rs—L. H. Lebo, Lebanon
rs—C. D. Carey, Williamsport
rs—E. C. Wiggins, New Castle
rs—A. C. Sprout, Mercer
rs—W. B. Frisbie, Stroudsburg
rs—S. L. Horst, Norristown
rs—Derl Hess, Sunbury
rs—H. W. Staiger, Coudersport
rs—G. F. Dye, Somerset
rs—G. D. Derr, Montrose
rs—T. W. Crittenden, Wellsboro
rs—C. F. H. Wuesthoff, Warren
rs—J. B. Park, Honesdale
rs—R. E. Seamens, Greensburg
rs—T. M. Mahn, York
t—Henry S. Bruner, State College
t—William F. Hall, State College
it—Russell B. Dickerson, State College
it—D. C. Sprague, State College

PUERTO RICO
d—Lloyd A. LeZotte, San Juan
s—Nicholas Mendez, San Juan
t—Lorenzo Garcia Hernandez, San Juan
t—Ernesto Vazquez Torres, Mayaguez
ds—Juan Acosta Henriquez, Arecibo
ds—Juan Robles, Cayey
ds—Andres Ramirez, Mayaguez
ds—Samuel Molinary, San Juan

RHODE ISLAND
d-s-t—George H. Baldwin, Providence
t—Everett L. Austin, Kingston

SOUTH CAROLINA
d—J. H. Hope, Columbia
s—Verd Peterson, Columbia
ds—W. C. James, Columbia
ds—W. M. Mahony, Anderson
ds—R. D. Anderson, Walterboro
ds—R. E. Naugher, Lonis
t—W. G. Crandall, Clemson
t—W. C. Bowen, Clemson
t—J. B. Monroe, Clemson
ct—J. P. Burgess, Orangeburg
ct—Gabe Buckman, Orangeburg

SOUTH DAKOTA
d—J. F. Hines, Pierre
s—H. E. Urton, Pierre
t—R. R. Bentley, Brookings

TENNESSEE
d—G. E. Freeman, Nashville
ds—G. B. Thackston, Gallatin
ds—J. W. Brimm, Jackson
ds—L. A. Carpenter, Knoxville
t—N. E. Fitzgerald, Knoxville
t—J. B. Kirkland, Knoxville
rt—A. J. Paulus, Knoxville
rt—E. B. Knight, Knoxville

TEXAS
d—Robert A. Manire, Austin
s—J. B. Rutland, Austin
ds—O. T. Ryan, Lubbock
ds—C. D. Parker, Kingsville
ds—C. B. Barclay, Commerce
ds—B. C. Davis, Austin
ds—J. B. Payne, Stephenville
ds—R. A. Shaw, Nacogdoches
ds—W. E. Williams, Alpine
ds—T. R. Rhodes, Huntsville
t—Henry Ross, College Station
t—Malcolm Orchard, College Station
rt—W. R. Sherrill, College Station
t—L. V. Halbrooks, College Station
t—J. L. Moses, Huntsville
t—W. E. Driskill, Huntsville
t—S. V. Burks, Kingsville
t—Ray L. Chappelle, Lubbock
it—T. L. Leach, Lubbock
it—F. D. Shackelford, Kingsville
cs—J. C. McAdams, Crockett
cs—Gus Jones, Caldwell
cs—S. E. Palmer, Tyler
cs—E. E. Collons, Texarkana
cs—B. S. Luter, Prairie View
ct—E. M. Norris, Prairie View

UTAH
d—Charles H. Skidmore, Salt Lake City
s—Mark Nichols, Salt Lake City
t—L. R. Humpherys, Logan

VERMONT
d—John E. Nelson, Montpelier
s-t—W. Howard Martin, Burlington
s-t—Charles L. Park, Jr., Burlington

VIRGINIA
d—Dabney S. Lancaster, Richmond
s—D. J. Howard, Richmond
ds—F. B. Cale, Appomattox
ds—T. V. Downing, Ivor
ds—J. O. Hoge, Blacksburg
ds—W. R. Legge, Winchester
rt—Olive A. Salem, Blacksburg
t—Harry W. Sanders, Blacksburg
t—Henry C. Groseclose, Blacksburg
t—E. Y. Noblin, Blacksburg
t—C. E. Richard
ct—G. W. Owens, Petersburg
ct—J. R. Thomas, Petersburg
ct—Roscoe L. Lewis, Petersburg

WASHINGTON
s—J. A. Guitteau, Olympia
t-s—E. M. Webb, Pullman
t-s—Bert L. Brown, Pullman

WEST VIRGINIA
d—W. W. Trent, Charleston
s—John M. Lowe, Charleston
s—H. N. Hansucker, Charleston
t—M. C. Gaar, Morgantown
it—D. W. Parsons, Morgantown
it—A. D. Longhouse, Morgantown

WISCONSIN
d—George P. Hambrecht, Madison
s—Louis M. Sasman, Madison
t—J. A. James, Madison
t—V. E. Kivlin, Madison
t—V. E. Nylin, Platteville
t—J. M. May, River Falls
it—Ivan Fay, Madison
it—Clarence Bonsack, Madison

WYOMING
d-s—Sam Hitchcock, Cheyenne