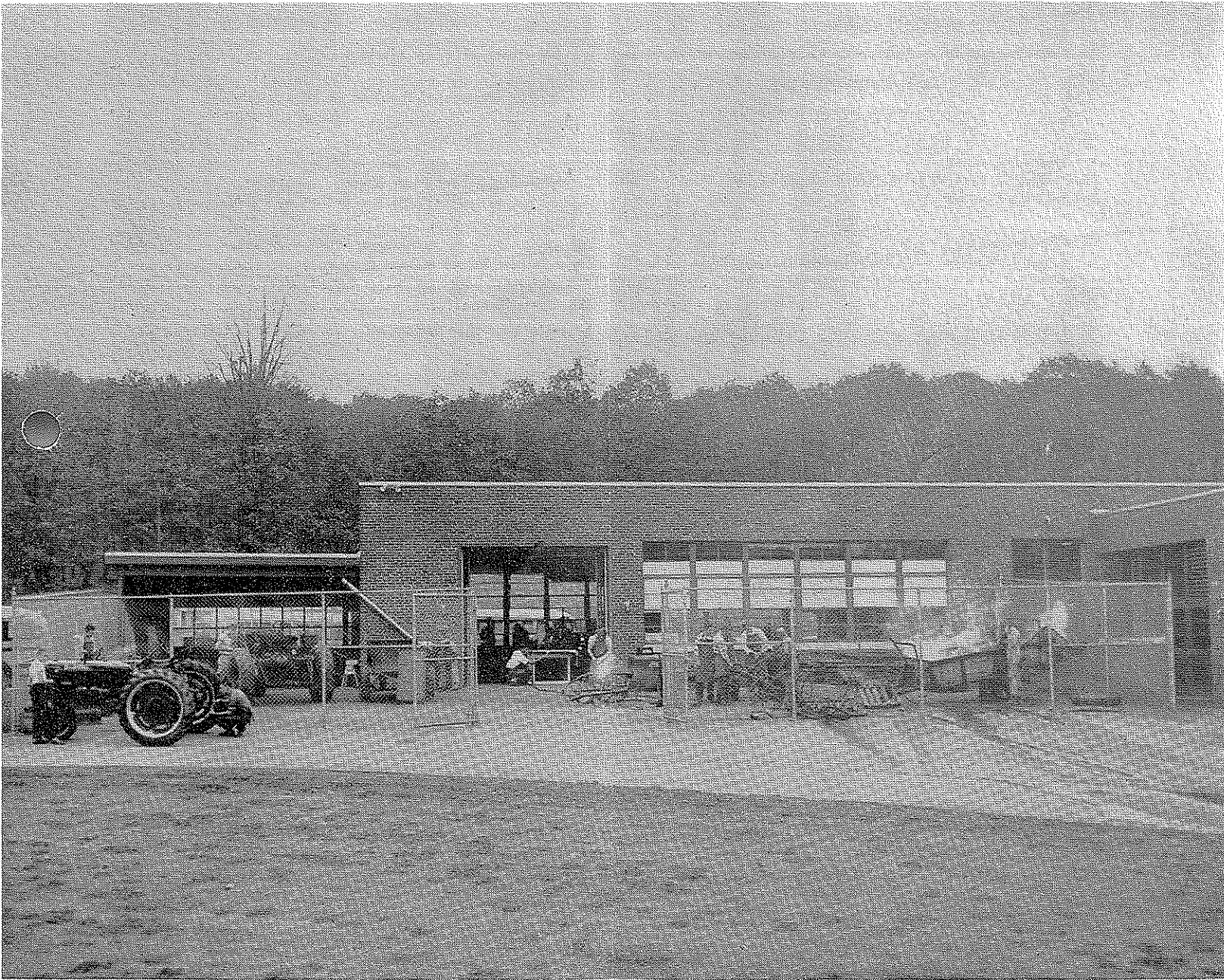


The **AGRICULTURAL EDUCATION** *Magazine*

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Picture legend, page 151

Featuring— **The Farm Mechanics Program**

The Agricultural Education Magazine



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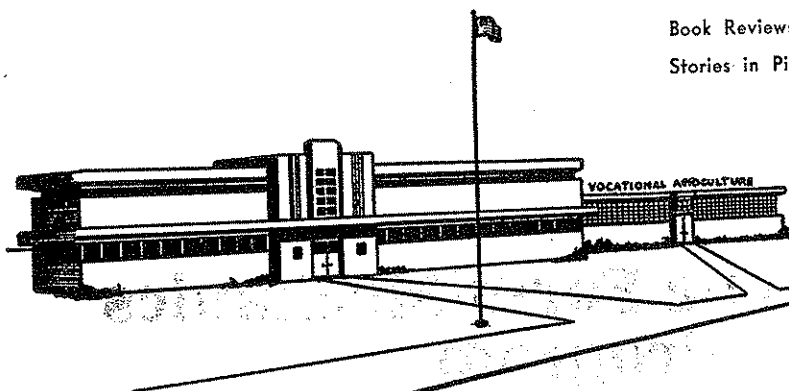
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Selectivity in Farm Mechanics

C. W. HILL, Teacher Education, Cornell University.

The farm mechanics phase of the vocational agriculture program exists to develop within all-day pupils, young farmers, and adult farmers effective abilities required to be successful farmers. At times it seems that our concern is more with teaching skills in woodworking, electricity, metal working, etc., rather than teaching the learner the effective abilities needed in day to day and month after month farm operations. It is granted that the learners should acquire certain of these basic skills before they can perform some operations or solve some problems. But how much use do farmers make of the wood plane, the wood chisel or the wood lathe? From the beginning of vocational agriculture, woodworking was given much time in farm shop. What woodworking do farmers do today? What operations in woodworking do they perform?

Today, practically every farmer has a tractor and machines to go along with it. Also, he has electric power in his farm buildings. He has problems with his farm buildings. Soil and water management is of concern to many farmers. The farmer operates equipment from day to day. What are the effective abilities that he needs? What are the jobs or operations he performs and the problems he has to solve? Can they be identified? When these are identified, then we have the content for the training program in farm mechanics. Such a list of effective abilities would be selected for the farmers in each local area. They are specific for individual farmers in the area and not for an entire state or for all states.

The effective abilities needed by farmers in the school area serve as a guide to the teacher in assisting pupils in identifying the problems, jobs, or operations pupils should learn. On the farm, one may readily observe boys driving the farm tractor pulling large pieces of farm machinery. These boys have acquired certain effective abilities in the operation and maintenance of the machinery but other abilities they may not have learned. The course content should come from those problems to be solved or operations to be performed that result in the desired effective abilities needed to operate the farm. The identification of the problems comes from all areas of the farm operation rather than from farm machinery only as indicated above. From such a list of problems or jobs identified, a further selection must be made based upon the boys' interests, readiness and opportunity to learn the effective ability. The boy's proficiency in the performance will depend upon his actual participation and the degree of the experience. It is fundamental in learning that the pupil, young or adult farmer, must participate in performing the operation or the making of the managerial decision. These problems or jobs exist on the farm. The farmer has them to do. The young or adult farmer is aware of many jobs that face him. Others he does not recognize. The in-school pupils are less aware of the problems to learn than are older trainees. The problems or jobs are selected and learned with the assistance of the teacher.

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Include Managerial Problems In Farm Mechanics

EVANS G. THOMPSON, Teacher Education,
Virginia Polytechnic Institute

Farming is a changing occupation. Research is constantly discovering new and more efficient methods of growing crops and animals, as well as new and improved farm machinery and equipment. These and other new developments combine to make present day farming a highly competitive business. Not only must the farmer be able to make a multitude of wise managerial decisions, but he must also be able to perform new manipulative abilities as a result of increased farm mechanization.

With the large amount of money that farmers have invested in farm machinery, farm buildings, electrical equipment, and labor saving devices it is practically impossible to be an efficient farmer without being able to select the proper machinery and equipment, plan farm buildings that are appropriate for the farming needs, and be able to make efficient use of the machinery and equipment after it has been purchased. The ability to satisfactorily solve such problems as the following have become important to the successful operation of any farming business and, with few exceptions, have received inadequate attention in the instruction programs in Vocational Agriculture: selecting machinery and equipment for the farm; the care, operation, and maintenance of farm machinery; planning and maintaining farm buildings, fences and other

(Continued on page 148)

Emphasize Safety

IRA B. ROGERS, JR., Education and Rural Division,
Automotive Safety Foundation, Washington, D. C.

Accidents don't happen, they are caused.

Your challenge is to avoid accidents. Most accidents can be avoided because they are caused by human error. They take place because someone does something wrong.

Let's take a brief look at the accident situation involving our farm families then consider some of the things we can do to improve it.

The accident picture is expressed in statistics because that is the best way to do it. Each statistic though actually stands for a real person—someone who lost his or her life; someone who was crippled permanently; or someone who was injured but was fortunate enough to recover.

In a recent year 13,000 members of farm families were killed as a result of carelessness—more than 1,100,000 were injured. Farming as an industry ranks as the third most hazardous occupation having 3,700 killed while engaged in farm work.

The leading cause of death among rural residents is the motor vehicle. In 1955, 5,700 lives were snuffed out by this creation of man. These figures—each rep-

(Continued on page 148)

Selectivity - - -

(Continued from page 147)

One frequently hears this question raised, "How do you get boys to bring jobs to the shop?" When asked, "Have you been to the farm to help the pupils identify jobs?" The reply is likely to come back "No." Helping the *pupil* to recognize his instructional needs is only one-half the job. The *parent* plays an important part as he is the one to grant permission for the pupil to have the opportunity and responsibility for the performance of the job. The boys will be granted responsibility to the extent the parents are convinced of the value to the boys. The teacher is the person to develop the understandings with the parents so that they will permit the boys to have either shared or full responsibility for the job. All of this needs to be done on the farm with the pupils and parents. There is no substitute for identifying jobs on the farm and for the negotiations for pupils' responsibility with parents.

There is a strong tendency to think of teaching farm production jobs in the classroom and farm mechanics jobs in the shop. For many units, this is appropriate. For other units, both kinds of instruction are involved in the same jobs. To illustrate, a job on fall or spring plowing is being taught. When decisions are made and the practices are developed, the unit often times terminates. Might not the learner also need to know how to properly attach or hitch the plow to the tractor, or to make the necessary adjustments, or how to service the machine? Another illustration is seeding small grains. We are very careful to decide on the proper number of bushels to sow per acre. Just as important, is setting the machine to sow the correct rate per acre. One further illustration is the lighting of the laying house for hens. It is good to teach the practices to use in providing artificial light for the flock. The practices are of no value until the electric current is flowing to the house and the essential wires and fixtures are in place. The farm mechanics instruction can be effectively integrated with the classroom instruction. Thus, the learner will be assisted in solving the problem and removing all the road blocks in the performance of the job.

It is important to make a beginning and to advance in learning effective abilities in the area of farm mechanics as well as in production, marketing and management. It is equally important that these abilities be real farm jobs faced frequently by farmers.

To summarize, the farm mechanics instruction should be based upon the effective abilities needed by successful farmers in the school area. The problems or jobs should be identified on the farm by the learner with the assistance of the teacher. The parents must grant to the boy a share or full responsibility for solving and doing the job. Production and farm mechanics instruction can be integrated thus making for a more complete solution to problems and more complete development of effective abilities required in successful farming. □

Emphasize - - -

(Continued from page 147)

resenting a human being—show that highway accidents are a serious problem. This problem results from the improper use of our automobiles, roads and streets.

Because of the great increase in the number of motor vehicles and the miles that are driven, your exposure to accidents is higher today than when people started driving years ago. Despite this, much progress has been made in reducing the death and accident rates. However, far, far too many people are killed and injured each year.

You must do all you possibly can to use our roads and streets safely. It is the responsibility you must shoulder when you are permitted to drive a car and to reap the benefits which go with the privilege.

What are some of the things you can do?

Well, first, you must have a good attitude. Safety experts agree that one of the most important factors in driving is attitude. There are a number of definitions of attitude but, for our purposes, let's call it "a way of acting" or "the way we behave."

Poor attitude, according to the experts, is the greatest single cause of traffic accidents. If you have a good attitude it will help prevent, rather than cause, accidents.

Good attitude is best displayed in the use of courtesy. Courtesy is especially important on the highway. If we fail to show it there, we easily can cause an accident. That failure can have fatal results.

Good attitude also is displayed in other ways. Actually, it extends to everything you do in connection with the car and driving. In keeping with maintenance of a good attitude you will be sure that the motor vehicle you are driving is safe mechanically—that the steering mechanism is in proper working order—that all the lights are in correct adjustment—that the horn will sound—that the windshield wipers operate, and that the tires are in safe condition.

On the highways you will stay alert; not drive when you are overly tired, or sleepy. You will give full time and attention to your driving, observing and obeying all directional and warning signs, signals and markings.

You will drive within the speed laws; not pass other cars when such a maneuver is unsafe. You will stay in the proper traffic lanes and you will drive in keeping with weather, conditions of road and of visibility.

The development of a good attitude begins long before you start to drive. As part of the development, you will try to realize the great responsibility which is placed upon you when you are granted a permit to operate a motor vehicle.

If each individual would take the responsibility to treat others on the road as he would like to be treated, farm families can look forward to a great reduction in this cause of injuries and

Include - - -

(Continued from page 147)

structures; planning and maintaining the farm and home wiring system; selecting and maintaining motors and other electrical equipment; and establishing a home farm shop.

Several surveys by different States indicate that farmers began to identify some of these needs as early as the late 1930's and early 1940's. In some instances, as evidenced by what the teachers were actually teaching, there was an indication that the farmers recognized this changing pattern of farming before the teachers did.

Probably the most widely accepted objective of instruction in farm mechanics is—"To develop in the students (all-day, young, and adult farmers) the ability to perform those unspecialized jobs that need to be done on the farm with the tools and facilities available." This objective seems to be too limited for providing adequate instruction in farm mechanics to train present and prospective farmers for proficiency in farming. It implies or is usually interpreted to mean that training is to be given only in the manipulative phases of farm mechanics. It more nearly meets the objective of farm shop work which is only one of the educational areas in farm mechanics. If vocational agriculture is to make its proper contribution toward the solution of the problems listed above, the teaching program must be expanded to provide for instruction, in proportion to local needs, in the areas of farm power and machinery, farm buildings and conveniences, farm electrification, soil and water management, and processing farm products, as well as farm shop work. Such a program would include instruction in managerial and operative type jobs as well as the manipulative phases of farming. This would extend the place of the instruction beyond the four walls of the shop. It would also include instruction in the classroom and on the farm.

This is not to minimize the importance of developing the basic manipulative skills in farm shop work. Instruction in farm shop work should develop the ability to perform the basic manipulative activities and is basic to instruction in the other areas of farm mechanics. If the manipulative activities such as welding, soldering, cold metal work and woodwork are not developed in the farm shop program, an effective farm mechanics program in the other areas is difficult to develop. The minor breakdowns on farm machinery can usually be repaired by welding, bracing with cold metal, woodwork, or soldering. But, if a farmer does not know how to perform the manipulative work involved the repair probably will not be made until a major breakdown occurs, which may involve a large expenditure of money, loss

(Continued on page 150)

fatalities which takes such a great toll of their human resources. In other words, let us begin to practice the conservation of human resources on the highway. □

Safety in the school farm shop

BENTON K. BRISTOL, Teacher Education, The Pennsylvania State University.

THE school farm shop facilities available for the use of students in vocational agriculture are constantly improving. Power tools and machines which the teacher could only hope for a few years ago are now provided in many farm mechanics shops. The increased number of power tools being used, and the emphasis on farm mechanization, both pose additional safety problems. The teacher of vocational agriculture is in a strategic position to help those he instructs to control safely the power which is theirs.

Use the Instruction Manual

A representative of one of the large machinery companies has said, "We sell the owner an instruction manual and give him the machine to go with it." The instruction manual which comes with every power tool is important. It should be carefully studied and treated with the respect due it as a valuable document. The manual not only tells the operator how to operate and maintain the machine, but describes its safety features as well. Safety rules which apply to the particular power tool are also presented. The careful instructor will study the manual thoroughly, and encourage his students to do the same. Often, however, it is necessary for the teacher to explain or give additional information about the recommended practices.

Sometimes space cannot be afforded in the manuals to cover adequately the reasons for following the procedures and safety practices listed in them. While it may be true that an experienced workman will already know many of the reasons for the safety rules given, the same assumption can seldom be made safely for those enrolled in high school farm mechanics instruction.

Need for a Loading Ramp

The increased number of farm machines brought from the farm to the school shop, and the increased number of large projects completed (by all-day students, young farmers, and adults), make the need for a loading and unloading ramp apparent. Examples of two

such ramps are shown in the pictures which follow. One is suitable for level topography, while the other lends itself to uneven ground. The ramp plan which is shown gives an idea of construction details. The structure should be located near enough to the shop to be convenient, but should in no way interfere with taking large machines in and out of the shop.

Get Rid of Exhaust Fumes

Increased work on farm tractors in the school farm shop brings out the importance of having an adequate carbon monoxide exhaust system. The benefits derived from such a system more than compensate for the cost involved in its installation.

The attitude expressed by the teacher of vocational agriculture toward the facilities already mentioned, and toward all other safe shop procedures and practices, is the most important single factor in having a safe school farm shop.

Example Set by the Teacher

A sincere belief in the importance of safety will be demonstrated by the teacher in ways not always apparent to him, but which are obvious to the students who look to him for guidance. Some of the common ways he has of indicating the value he places on safety are: (1) the regularity with which he follows safety rules himself; (2) the alertness with which he orders needed safety facilities (and maintains the ones he already has); and (3) the effectiveness of his safety instruction.

The instructor must set a good example for his students. As one example, appropriate shop dress dictates the absence of cuffs on trousers, a bow tie rather than a dangling one, a dark shirt rather than a white one, trim sleeves rather than floppy ones, and clothes which can stand the wear placed on them by farm shop activities. Other examples of safe practices which no teacher should ever fail to follow are:

Using safety goggles when grinding, and at other times when eyes should be protected (from either metal or wood particles).

Using the tool rest of a power grinder to support the stock whenever possible.

Being sure that the tool rest of a grinder is kept adjusted close to the grinding wheel (the distance from the wheel should not exceed $\frac{1}{8}$ inch). Using a drill press clamp, especially when short pieces of stock are being drilled.

Using the guards which are provided on power tools and machines for the safety of the operator. In cases where the guards themselves create unsafe conditions, they should either be repaired, replaced, or redesigned. Using off-bench stands where appropriate.

Other Safety Measures

Minimum safety facilities necessary for the farm mechanics shop, in addition to those already mentioned, surely would include:

The use of color dynamics in the shop to raise morale and foster pride, improve lighting conditions, point out parts which must have something done with them every time the tool is used, point out danger spots, and make fire-fighting and first aid equipment readily visible and easily available.

A well-equipped first aid cabinet containing a first aid manual, tourniquet, sterile gauze, bandages of several widths, bandage compress, absorbent cotton, adhesive tape, scissors, wooden applicators wound with cotton, wooden splints, Tincture of Merthiolate, Unguentine, Peroxide, Aromatic Spirits of Ammonia, Mentholatum, and Baking Soda.

Fire-fighting equipment appropriate to the kinds of fires which might start in various shop work areas.

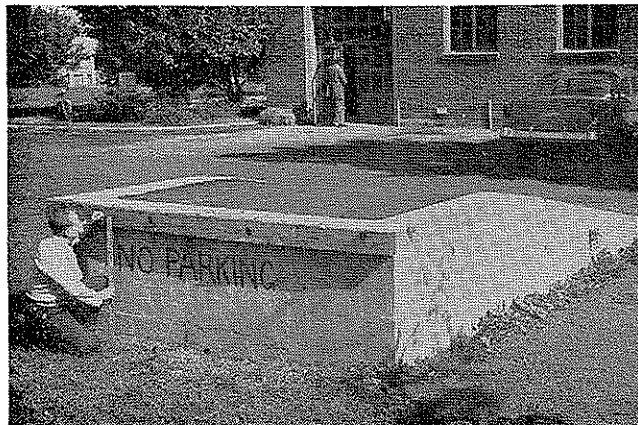
Safety cans for inflammable materials, properly labeled.

Safety Instruction

The teacher who is concerned about the safety of his students will give them definite instructions on how to use the first aid materials available and how to treat eye burns, burns, cuts, and skin abrasions.

Other ideas which a number of instructors have used effectively are:

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Loading Ramp Suitable for Level Land.



Loading Ramp Suitable for Uneven Topography.

It happens every year

The yearly farming activities provide farm shop problems.

HAZEN N. BELYEA, Vo-Ag Instructor, Ashland, Maine.



Hazen N. Belyea

AFTER August 20th in Aroostook County, Maine, the chief interest and conversational topic is "potato harvesting." By then, the foundation for the expected crop is well established. Farmers are already checking as to size and weights in an attempt to estimate the seasons yield. Top killing must soon be done in many fields if the maximum yield of "premiums" is to be harvested. Actual harvesting, however, may not begin before another month since the tubers will require from two to three weeks to set the skin and ripen the potatoes enough to dig safely after killing the tops.

In general, Aroostook farmers are friendly, sociable, and businesslike. They get together in groups and discuss the forth coming harvest. Their discussions will range from harvesting wages to storage facilities to probable local prices. They agree upon a very adequate wage scale which they all hope to abide by. All seems serene. Then the harvesting season is at hand, they actually get started and everybody seems to become just a little bit mad.

Some farmer in a neighboring town jumps the gun, he offers two or three cents more for picking. Other farmers in his area follow suit, it seems mandatory. Farmers in other areas hear of this in devious ways, possibly through the loss of some pickers. They too have not much choice, they either raise their picking wage or else. Jobbers find themselves in a cost-price dilemma, their pickers may be here today and gone tomorrow. Trucks shuttle back and forth from field to potato house with barrels thumping. Tractors purr or bark as their condition warrants. A couple of rainy days keeps every one at home to rest and to ponder. The potato harvesting season in Aroostook is away to a normal start.

The superintending school committees in most Aroostook towns are well aware of these contingencies. They plan well in advance to work with and go along with the existing conditions. As a result of this planning our schools open in the latter part of August for a period of from three to four weeks and then close for a three to four week digging recess. The digging recess offers opportunities for the students and teachers alike to earn needed cash for the long winter months ahead. Of course it is a foregone conclusion that the local farmers are in great need of this extra help.

The Place of Farm Mechanics

The first three or four weeks of school before the digging recess offers the boys in Farm Mechanics an excellent opportunity to repair digging equipment. Most of the equipment for repair comes from the boys' home farm, but with very little "advertising," we

could be really swamped by farmers who are waiting "in hopes." The fact that our repair facilities are much less than adequate does not stop the boys from bringing in repair work of their own. If the shop is too small the yard out front still offers possibilities, and repair work goes on outside as well as inside our shop. The digger in the accompanying picture was repaired outside the shop despite rainy days and inclement weather.

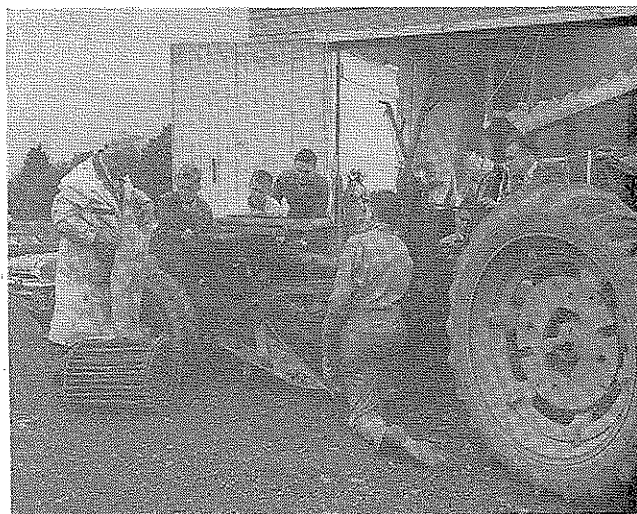
During the late fall and winter months the repair and maintenance work must of necessity be confined to the shop. Beside diggers we work on tractors, plows, harrows, seeders, potato planters or construct farm trailers. Our shop seems always full to overflowing, and the boys enjoy their varied and busy program.

The value of our Farm Mechanics Program to the community is hard to estimate. One farmer when asked this question came up with a one word answer, "PLENTY!" We agree. □

Include - - -

(Continued from page 148)

of time, and possibly a loss of some of the crop. However, the manipulative skills developed in farm shop mean little unless they make a contribution to the farming program. For example, skills developed in electric welding should aid in maintaining farm machinery. Likewise, skills developed in woodwork should aid in maintaining farm buildings and equipment. To get the basic skills developed in farm shop work used in maintaining farm machinery and other areas in farm mechanics, implies a transfer of learning. Educational Psychologists tell us that we can make transfer of learning more effective if we teach for transfer. They further say that teaching for transfer involves liberal use of generalizations, performing the skill in various situations, and pointing out similarities between different situations. This would seem to indicate that if we expect to get the students to make maxi-



Mr. Belyea points out to the boys in the Farm Mechanics group that the digger side panel should either be replaced with a new one or be repaired by welding narrow strips of 3/16 inch plate over the worn area. In the background a student is repairing the mate to the side panel which Mr. Belyea is holding. All boys in Vocational Agriculture become quite proficient in the use of the acetylene and electric arc welders while repairing equipment of this kind.

imum application of basic skills, we must get them to make as many applications of the skills as possible in our teaching program. This further emphasizes the need for including tractor maintenance, machinery repair and maintenance, etc., as a part of the instructional program in farm mechanics.

In planning local teaching programs in farm mechanics the teacher must know the farming needs of the members of his classes. The farm mechanics program must be based on these needs and planned as an integral part of the total vocational agriculture program. If it is not a part of the vocational agriculture program and does not make a contribution toward training farmers for proficiency in farming, it has no place in our program. But, if the actual needs, including managerial decisions to be made, of the individuals are determined, by a farm survey or by some other method, and good practices are used in developing and conducting an instructional program based on these needs there should be no doubt of its value to the all-day students, young, and adult farmers in the community. □

Safety in the - - -

(Continued from page 149)

Regular safety inspections by Student Safety Engineers.

Signs located in each work area, which list the safe practices to follow in the operation of the power tools found there (which do not themselves constitute safety hazards).

Pre-testing students on safety procedures for each power tool before they are allowed to operate it.

Alert teachers in well-equipped shops greatly assist their all-day students, young farmers, and adults in developing essential skills needed on today's mechanized farms. Safety must keep pace with the expanded role in farm mechanics of the vocational agriculture program. □

Try a tractor school in your program

It pays in many ways.

DAVID RICE, Vo-Ag Instructor, Genoa, N. Y.

"It Takes Time To Save Time" is the motto of the farmers in the Genoa Central School area. These farmers spend a few days during the heart of the winter in the school shop, repairing their machinery and knowing full well that it will save hours of time later during the rush season.

The Farm Machinery School started during the war as an emergency measure to repair the badly needed machinery when new machinery could not be purchased. Since that time the farmers have insisted that the Farm Machinery School remain a part of the service of the Genoa Vocational Agricultural Department.

A Winter Activity

Immediately following Christmas vacation the school opens its Vocational Agricultural shop from nine-thirty A. M. through four-thirty P. M. for a period of ten to twelve weeks, depending upon the time required to do all of the necessary repairing of the machines in the school district.

The repair school is part of the Adult Education program and, as such, an instructor is hired to help the farmers as the need arises. Emphasis is placed on each farmer doing his own work and getting help only on those jobs which he has not done previously. There are usually eight to ten farmers working at one time so the instructor must give only limited time to each person.

A typical day might find six tractors, a set of plows, two combines or baler motors, a chopper and a disc harrow being repaired. We try to run an individual item through its repair job in a week's time.

Variety of Repair Jobs

Last year we repaired over fifty tractors. This repair work included valve

jobs, complete overhauls, ring jobs, ring gears, bearing jobs, transmission jobs, tire repair, etc. Nearly every tractor is painted before it leaves the shop. In addition to the fifty tractors we had six Wisconsin engines, two balers, three manure spreaders, plows, harrows, discs, choppers and others.

At first we had much criticism from the farm machinery dealers, but over the years the criticism has diminished. We feel that many more items, such as paint, valves, rings, etc., are purchased from the dealers than would be the case if the farmer did not have this opportunity to do his own work.

How It Is Financed

There is a considerable cost to the school board. However, a high percentage of this cost is reimbursable through the Adult Education Program and the Federal Vocational Acts. Since I have been in Genoa I have not heard any complaints about the tax money that is being spent for the Vocational Agricultural department because the people are getting benefits from it for themselves. One farmer told me a year ago that he more than paid his school tax each year by the labor charges he saves in the farm machinery repair school.

A Stimulus to the All-day Pupils

I feel that one of the greatest benefits is the interest that the farm machinery school fosters in the Vocational Agricultural boys. These boys can hardly wait for the adult school to close so they can bring in their own farm machinery for repair. We have very few conflicts with other course work. I schedule my shop classes during the other thirty weeks of the school year and this plan works out well. The additional tools we have for the farm machinery school are used for repairing the tractors and other machinery

The Cover Picture

THE vocational agriculture wing of the new Marion Center Joint High School in Indiana County, Pennsylvania, includes modern facilities for an expanding program of instruction in farm mechanization.

The young-adult farmers class meets on Thursdays during school months. The senior all-day group is in the shop with them for two periods. The cover photo was taken on a Thursday this past fall. One man and his son were using the steam jenny as they started to overhaul a manure spreader. Seniors were helping another young farmer re-sole, adjust, and turn the teeth on a 4-section harrow. Two tractors had received engine tune-ups and were being painted. The YFA president was remodeling hinges for a milk house door and a last year's graduate was servicing a mower before storing it for winter.

Facilities for teaching vocational agriculture at Marion Center include a 22' x 30' classroom, 10' x 20' laboratory and 10' x 10' conference-office area, 10' x 20' greenhouse, 40' x 70' farm mechanics shop, 20' x 30' farm equipment port, and 28' x 90' paved outdoor area enclosed by a woven wire fence.

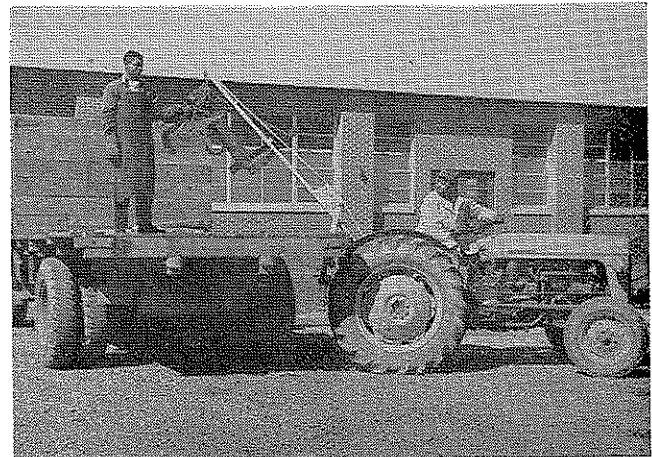
Robert E. Steffy, head teacher since 1944, is on sabbatical leave studying at Penn State. Jame L. Cook devotes somewhat more than half of his time to the young farmer work. Herbert Pollock is teaching during Mr. Steffy's leave. Photo furnished by Glenn Z. Stevens.

To be featured in February — THE FFA PROGRAM

of the boys. The extra use of these tools by the boys makes them less expensive to own. If you like shop work and want to do a real service for the farmers in your area, try a farm machinery repair school. □



A tractor blade constructed by a young farmer from scrap and discarded materials. It cost this young man only labor, paint and electrodes. A similar blade would retail for \$172.00.



This lift was also made from discarded materials. It will lift about 1,000 pounds ten feet high. Here it is loading a piece of equipment on a truck.

Integrate your shop instruction

Management and skill abilities should be related.

WILMER L. HARRIS, Vo-Ag Instructor, Mechanicsburg, Pa.



Wilmer L. Harris

FIRST, I want to explain what I mean by integration. When I refer to integration I am thinking of integration of the mechanical phase of farming, usually called "shop," with the non-mechanical phase, usually termed "classroom instruction."

I feel that all too often our mechanical phase of instruction is little more than permitting the students to go into the school shop and construct projects. Don't misunderstand me, I believe that a certain amount of construction is necessary, but I don't think it is the all-important phase of farm mechanics instruction.

With the onset of mechanized farming and the tremendous investment which a farmer has in machinery, we as teachers of vocational agriculture must teach our students how to select, adjust, and prolong the useful life of this great investment.

Need for Management Abilities

Let me point out why I think more time should be spent on farm machinery. We might permit a boy to spend four periods per week for twelve weeks constructing a farm elevator which would save him \$50.00 to \$100.00. However, if we would use this time in teaching the boy how to select and care for a combine we could possibly save him \$400.00 to \$500.00 or more by teaching him how one machine is better adapted to his land than another as far as topography and size of operation are concerned, by teaching him how to adjust the machine to save all the grain possible, and by teaching him how to lubricate and care for the combine to reduce repair costs and prolong the life of the machine.

Integrate with Production Problems

I believe we can all see the need for this instruction but you ask, "when shall I teach it?" This is where, in my opinion, integration enters the picture. Why not be realistic about the whole thing? Why not, if we are teaching a unit on planting corn in March or April, include in that unit the selection, adjustment, and maintenance of the corn planter? When we are discussing corn planting rates, why not have a corn planter in the school shop and calibrate it? If we do this during class time, as I believe we should, so we can keep it a coherent unit, we will have to reduce the time set aside during the week for the boys to work on their individual projects and increase the so-called "classroom instruction" time. (I am referring to it as classroom instruction time for want of a better term.

Actually much of this instruction will be done in the shop.) By allowing more time for "classroom instruction" we will be reducing the time for the less important phase of construction and increasing the time for work on farm machinery with the "integrated" plan.

I am reminded of a statement by a vocational agriculture teacher who asked a question of one of the Agricultural Education instructors from the college. It ran something like this, "Am I justified in using classroom time to teach maintenance of farm machinery?" Are we, I ask you, becoming so conscious of our teaching methods and time allotments that we are neglecting to teach the problems which the farmers face today? To the farmer, care and adjustment of a corn planter are just as important as the selection of a variety of corn to plant. It is part of his total job of planting corn so why shouldn't we include it as part of our total teaching unit on planting corn.

Have We An "Excuse"?

The eternal cry and excuse for not including instruction on farm machinery in our teaching plan is that we haven't had the training to prepare us for teaching it. From the little teaching experience that I have had, I believe that we learn by teaching and not from listening to

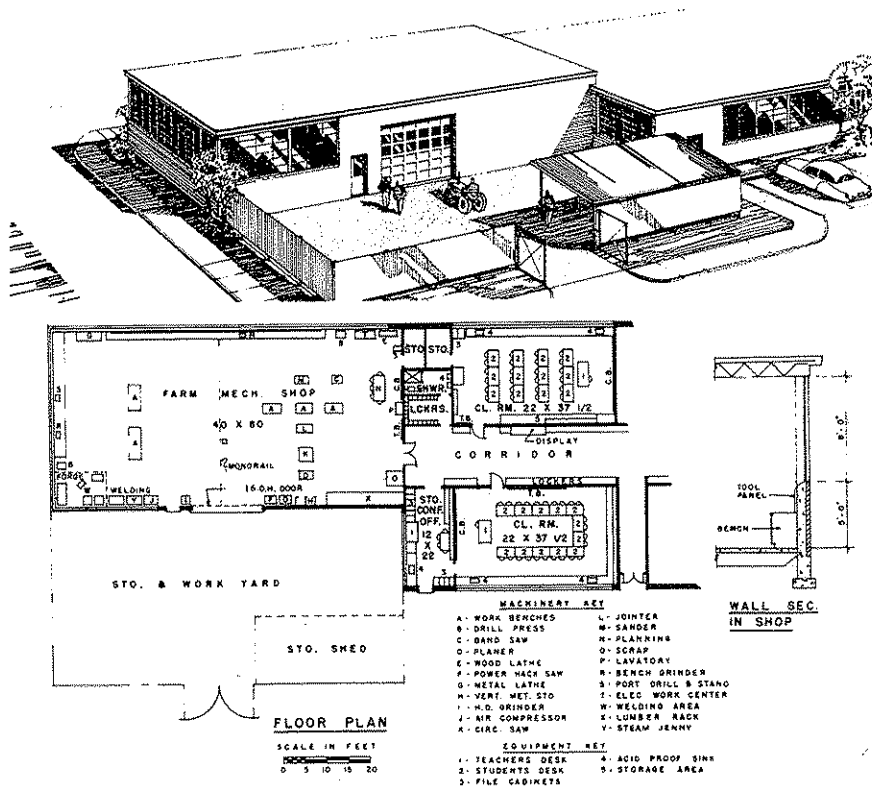
some professor at the university. If we lack confidence to teach a certain lesson on a particular machine we can always call on a local implement dealer to assist us.

I have "jumped" from integration to the need for teaching more on farm machinery and from this to an excuse for not teaching more on farm machinery when all I wanted to do was "sell" the idea of integration. Possibly I can tie together some "loose ends" if I close by giving you two reasons why I feel we should lean toward the so-called "integrated method" of teaching.

In Summary

First, and probably most important, is the fact that with the "integrated plan" we have all of the mechanical jobs included in our teaching plan and if we are following such a plan we will be more likely to teach the mechanical phases of the different enterprises. Secondly, we will be teaching the unit in the order which the farmer faces and must solve his problems. The farmer doesn't select the variety one year and adjust the machine the following year. He must do all the jobs connected with planting corn each year. With the "integrated plan" we would also be teaching a unit which would include all the jobs connected with planting corn or whatever enterprise it might be. We wouldn't teach selection of the variety one time and calibration of the planter when and IF it became convenient to have a planter in the shop.

I hope that I have made you feel there is as much of a need for integration as I think there is. □



A drawing and floor plan of facilities suggested for a multiple-teacher Vo-Ag department in Pennsylvania. Space is provided for classrooms, laboratories and farm mechanics shop. The design was prepared by Hunter, Caldwell & Campbell, architects of Altoona, Penna., in cooperation with Frank Anthony and Benton K. Bristol of the Dep't. of Agr. Edu., Pennsylvania State University.

Farm mechanics for all

The whole community will benefit in a variety of ways.

ROBERT O. HARRIS, Instructor in Farm Mechanics, West End High School, Clarksville, Virginia.



Robert O. Harris

THE program in Farm Mechanics is one of the ways our school attempts to help our community cope with its problems. Located in an area where the majority of the families are tenants or renters, and where the standard of living and the level of farming is low, instruction is planned around the farming operations which these families follow, with emphasis on care, repair, and reconditioning of tools and equipment.

Farm Mechanics is offered to all groups enrolled in Vocational Agriculture—in-school students, Young Farmers, Veterans in Training, and adult farmers, with instruction for in-school students divided equally between other phases of Vocational Agriculture and Farm Mechanics, thereby permitting in-school students to acquire some skill in all areas of the shop.

The In-school Group

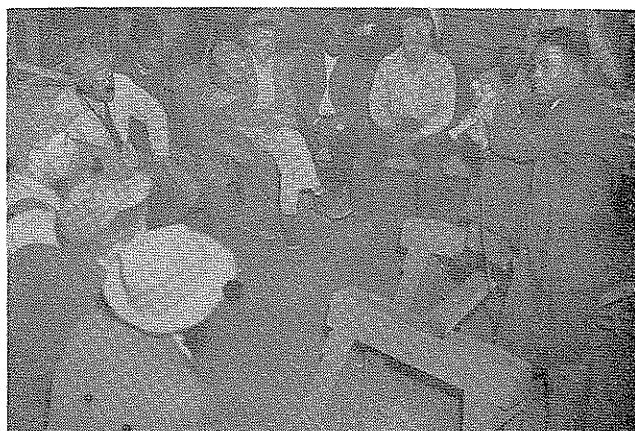
Once the class of in-school students has been enrolled and organized, the students are given survey sheets to complete, which, in addition to the usual general information, provide opportunity to indicate shop jobs in which they are interested, or for which they recognize a need. These survey sheets, along with the supervised farming programs, are used to help identify pressing farm problems and to help decide what to include in our Farm Mechanics—both on a year-to-year basis, and on a long-term basis. These surveys and the supervised farming programs determine specific jobs which ought to be taught as well as

broad areas on which most attention should be placed. When student replies are not sufficiently varied, other jobs are suggested to give balance and to provide experience in all areas. Frequently, one or more students wish help on problems which do not seem to be general, but which do merit attention. When this is the case, such students are helped on an individual basis.

Like many other shops, our shop is set up by areas—Welding, Tool-Fitting, Wood Work, etc. The tools, for convenience, are arranged in open cabinets, with supplementary tools and supplies on a portable tool cart. Other tools and supplies are kept in the toolroom. In the cabinets each tool has been outlined, both for ease of replacement and for quick day-to-day inventory.

Emphasis on Quality and Cost

In our shop, emphasis is placed on two principles, both of which we believe are important—first, that of doing every job correctly; and second, that of utilizing as much discarded and scrap material as possible. We firmly believe that it is "much easier to do a job right than to explain why it has been done wrong." Doing it right means doing it in a manner that represents quality workmanship, with parts properly fitted and secured, surfaces cleaned and painted, safe for use and improved both in service and appearance. Because our shop budget is limited, as is the budget on the farms of the students with whom we work, every effort is made to encourage resourcefulness and ingenuity, utilizing what we have to make what we need or



The adult class takes time out for a discussion period during its shop period. Here the instructor, R. O. Harris, demonstrates the use of the drill.

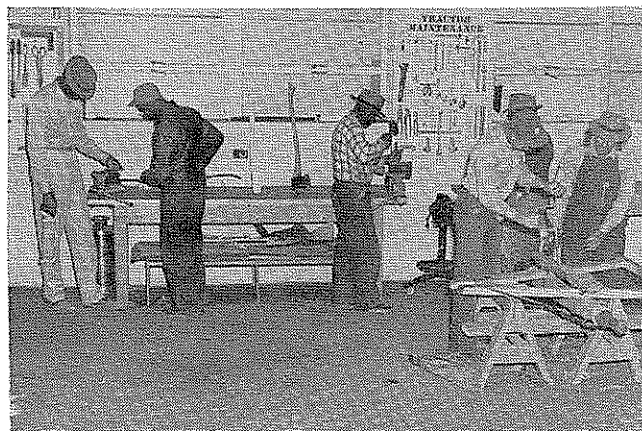
want. Some of the jobs shown in the accompanying pictures are examples of the kind of work we try to do.

Every Job Is Real

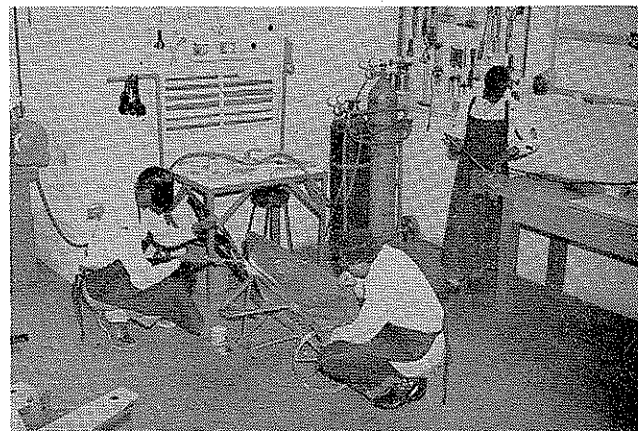
In our classes we make much use of models for job analysis from an instructional point of view as well as to give students a clearer idea of a job, both in the process of construction and of the completed job. Instead of relying upon trial exercises to teach basic skills, we use a variety of small jobs for practice. In this way, students have an opportunity to acquire skills without waste of good materials and, at the same time, produce articles which they may take home. We recognize that there is always a danger of over-emphasis on small household jobs—but, as we indicated earlier, our budget is limited, and skills and point of view about shop work acquired in this manner can be transferred to larger jobs.

At the same time, this practice helps our students acquire, at little or no cost, small pieces of equipment which they need at home. These include pieces which we normally would think every farm home would have, but which many of our homes don't have and probably wouldn't get otherwise—scoops, milk stools, shovels, ironing boards, checker boards, and the like. This sort of thing also does a good public relations job for the shop, and in many cases has been

(Continued on page 154)



A group of adult farmers at work in the farm shop. Note axes and other tools ready for handles or sharpening.



In-school boys get training in Welding in the Farm Mechanics classes. Boys in the foreground are repairing a wheelbarrow.

Farm mechanics programs change

Content, methods and facilities must keep pace with farming.

PAUL A. GILMAN, Assoc. Prof. of Farm Mechanics, Thompson School of Agriculture, N. Hampshire.



Paul A. Gilman

THE teaching of Farm Mechanics in high school programs of vocational agriculture has become exceedingly more complicated with the accelerated tempo of farm mechanization. Successful achievement in Farm Mechanics calls for reading and study on the part of the agricultural student, in addition to manual work and skill development.

The farmer of today, with his machines of greater working capacities, must be a more efficient mechanic than his father and grandfather whose machines were comparatively simple. One must therefore be able to undertake and follow to completion many farm mechanics skills on the modern farm.

Farm mechanics programs that are most functional are those that have been developed as a result of a careful study of the needs of the students' supervised farming programs along with the overall needs of the home farm.

Survey the Needs

A questionnaire containing the production aspects of the whole farming program and listing all tools and machinery, with a place to check their condition, should prove invaluable for the entire program. This should be carefully prepared by the vocational agriculture teacher and filled out by the boy while in conference with his dad and his teacher. Where this is done by each student there should always be plenty of worthwhile projects in which the many mechanical skills may be applied. The student, in conference with his teacher, would select the simple jobs first and progressively be steered into the more complicated and difficult projects as he advances in high school.

Select Jobs Carefully

Care should be exercised in the selection of these projects to be sure, first, that they are of value or use in the farming program, second, that they are within the abilities of the student, and third, that by their selection they are indirectly providing experiences in as many of the following areas as possible: acetylene welding, power transmission, blacksmithing, cold metal, electric welding, electricity, glazing, painting, plumbing, sheet metal, tool fitting, rope work, woodworking, and care and maintenance

of farm machinery common to the local community.

The planning and development of a home farm workshop should be worked into each student's supervised farming program.

Facilities Must Be Adequate

Such a procedure as outlined of course means that the school farm mechanics laboratory must be adequately equipped. In these times, how can the school authorities expect anything less when a farmer can no longer stay in business today unless he is a good manager and has adequate farm machinery with which to operate?

Not too long ago the farm mechanics shop was thought to be adequately equipped if it had a goodly supply of hand tools. At the present time we must be thinking in terms of portable power tools since time is of the essence. There is no place in our program for just busy work. To illustrate this point, all too often many pieces of metal, some with considerable size, have to be cut with a hand hack saw in the making of a farm trailer or other similar equipment. It would seem that a portable power hack saw, with a band saw type blade would be a better means of preparing the stock lengths for such projects.

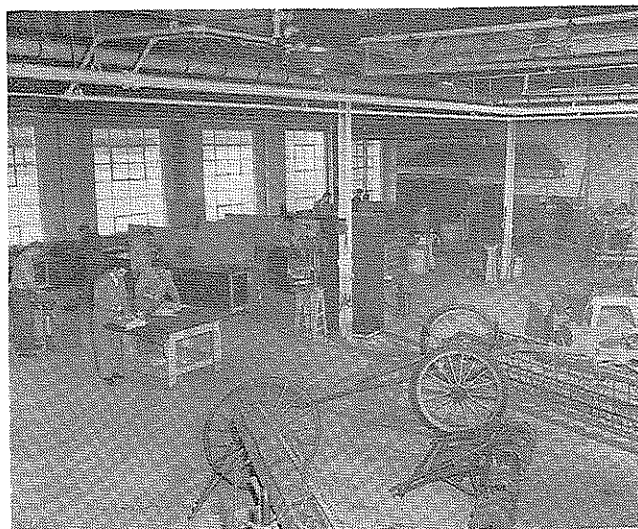
The scope of the farm mechanics phase of the program should be of such size as to make it impractical to continue long hours of tedious hand work, most especially if it is to fit into the total supervised farming programs of our vocational agriculture students. □

Farm Mechanics for All

(Continued from page 153)

responsible for parents coming to Farm Mechanics and other adult classes.

We recognize, as you do, that training in Farm Mechanics, even where 50 per cent of the Vo-Ag time is spent in the shop, is only a beginning. We know that we can't expect these boys to become expert in any area of the program, but, in the course of their training, we rotate the work, so that all areas are introduced and so that our boys will have the opportunity of becoming acquainted with as many skills as possible. Such a plan has helped many boys discover aptitudes



The Farm Mechanics Laboratory of the Thompson School of Agriculture, University of New Hampshire.

which they had not realized, and, in some instances, has provided a basis for further training in one or more mechanical areas.

Serving Adults

One day a week is set aside for farmers to work in the shop. Many of them take advantage of the fact that our class schedule is arranged so that the shop is free in the afternoons and come in more than one afternoon a week when they are working on larger jobs, or when emergencies arise. With farmers we emphasize the same principles which we teach the boys—quality workmanship and economical use of materials. The adults pay their own way, either in materials or money, and, as far as possible do their own work. It took a little time to get some of them to understand that they could not bring broken down and dilapidated tools and equipment, leave them and come back sometime later to find them ready for use again. Now the adults who come to the shop take considerable pride recounting the jobs which they have done and are increasingly able to do more of their work with a minimum of assistance and supervision. Working, as they do, in a friendly, cooperative atmosphere, the community has learned to work together on other projects, exchanging labor, skills and other resources.

A part of each shop period for farmers is spent in organized group instruction—either in demonstrations centered around a job which one of them has brought, or around a problem which is common to most of them. The instruction is informal and practical. Frequently one of the adults is used for all or a part of a demonstration for these sessions. Last year we averaged from eight to ten adults each shop day. More than four hundred items, ranging from butter paddles to tractor trailers were repaired, reconditioned or constructed.

All Are Served

Through Farm Mechanics, we try to contribute to the school's goal of be-

(Continued on page 157)

Who should teach machinery maintenance?

Four Delta Counties in Mississippi are using special full-time instructors for Special Adult Classes in Preventive Maintenance of Farm Machinery and Equipment; Several Other Counties Have Part-Time Instructors

L. P. JACKS, Vo-Ag Instructor, Leland, Mississippi.



L. P. Jacks

DURING the short span of three decades, one of the foremost problems facing the Mississippi Delta farmer has changed from that of "mud, mules 'n colic" to that of headaches in the preventive maintenance of mechanized farm equipment.

From a strictly cotton economy the area has progressed steadily to a more diversified type of farming, but the economy is still largely one of cotton.

With the fading of mule power into the background came the advent of the gas-driven engine and its cavalcade of accessory equipment. So the successful farmer of today must know more about machinery than his father, and his son must know even more.

Problem Is Acute

Many of the small farmers in the increasingly mechanized area own equipment equal in value to that of a small factory investment. Yet it is operated under entirely different situations, where no two moments of operation are ever the same. Problems have arisen in the care and operation of farm machinery. Cost of maintenance has been unnecessarily high! Equipment has been prematurely discarded or traded in. This has resulted in ever-increasing maintenance cost and loss of time from breakdowns, lower quality of farm products, increased safety hazards, and, in the final

analysis, less "folding" money in the pockets of the farmers.

Farmers and others have long realized that organized steps must be taken to correct the situation, particularly during these times when the "cost-squeeze" is greater. They have realized that something must be done to reduce costs of ever-mounting machinery breakdowns, and high depreciation costs. School administrators, vocational agriculture workers and others have long recognized the problem, but lack of trained instructors and financial and other problems have hindered progress in this field.

A Program Initiated

During the school session of 1954-55, the Vo-Ag department of the Vocational Division of the Mississippi State Department of Education initiated a program in a number of schools over the state designed to teach operation and preventive or "first echelon" maintenance to adult farmers. The benefits of this newly-initiated program are good. The securing of properly trained special instructors in the local school areas and financing the courses were problems which had to be faced. However, in spite of these problems, the program has been initiated in Mississippi.

After the program was started in the Delta area, farmers in other sections of Mississippi became intensely interested in this type of program, but probably the most interest was manifested by those in Washington and Sunflower Counties where farm mechanization has advanced rapidly. The Delta Council, a powerful organization of Delta farmers and businessmen, has long since made the matter a subject for special study. A sub-com-

mittee on farm mechanics training has been set up as a division of the Educational Policies Committee of the Delta Council. This committee tackled the problem objectively. Out of its studies, recommendations and contacts have emerged what may be a partial solution to the Vo-Ag departments' problems in meeting the instructional needs of a mechanized agriculture.

Special Instructor Employed

A special instructor, chosen because of his training and experience in the field of farm machinery, was employed by the State Vocational Department, under the supervision of G. G. Powell, Jr., a farm mechanics technician employed on a state level. Mr. Powell was employed only a short time prior to the inauguration of the program as the first supervising specialist in the field of farm mechanics of the State Department of Education, Vocational Education Division.

Ten classes in the two counties began operating in early October, 1955, with enrollments of an average of twenty per class. These classes, composed of five white and five colored classes, have been functioning as part of the adult programs in the Washington County High Schools of Leland and Arcola, and in Indianola, Sunflower Agricultural High and Linn Schools in Sunflower County.

Naturally, other counties in the area became intensely interested in the instructional program. Two additional instructors have been employed, and the high schools at Shelby and Boyle in Bolivar County and Minter City, Itta Bena and Morgan City in Leflore County are conducting the same type of programs in their local communities.

The Instructional Program

The number of classes per instructor has been reduced to eight, thus giving the instructors more time to plan, instruct and supervise those participating in the programs. Each class meets for two hours, or longer if necessary, twice monthly. Instruction is organized on a

(Continued on page 157)



The instruction in the operation and preventive maintenance of mechanized cotton pickers in the Delta area has been received with wide-spread interest. Here, Marvin Terrell, special instructor in farm mechanics for eight classes in Washington and Sunflower Counties, is instructing a group of operators.



The adult program dealing with farm mechanics problems has caused greater emphasis to be placed on instruction with in-school students. Here, two members of a class in vocational agriculture, under the supervision of L. P. Jacks, Vo-Ag Instructor, are cleaning out the radiator fins and checking the water-level.

No substitute for planning

Efficient facilities and their use in farm shop depend upon the thoroughness of your planning.

HOWARD F. FOX, Vo-Ag Instructor, New Castle, Penna.



Howard F. Fox

FACILITIES for a school farm shop may be divided into two parts: (1) Those facilities which are planned and incorporated into a building when it is constructed. (2) Those facilities which a teacher and students may build or alter to make teaching

most effective.

Student enrollment and finances naturally play a large part in determining the floor space allotted for the vocational agricultural shop. The sooner the teacher can be invited to advise with the school administration, board members, and architect the better. Floor area and location of shop in reference to other rooms in the proposed building would seem to be the logical place to start.

Factors of Location

Convenience to the Ag room, toilet facilities, access to utilities such as water, drains, gas, various voltages and/or phases of electricity needed, location in reference to driveways, and freedom from shop noises for other classrooms are all factors worthy of early planning.

Size and location of doorways and windows, patios, height of ceiling, cupboard and storage space, utility outlet locations, built in lockers, room for paintings, tools, etc., should next come in for consideration.

Be Able to Show Needs

Readers who have helped plan and build a new shop know there must be give-and-take with the architect and school officials as all have standards and limitations which must be met whether they be structural, design, space, or financial. However, the agricultural teacher should have from experience and study a well conceived plan for the

present and future needs of the school and community.

Well drawn plans based on careful study, experience and logic usually receive a welcome from those who are not intimately acquainted with the needs of a particular department.

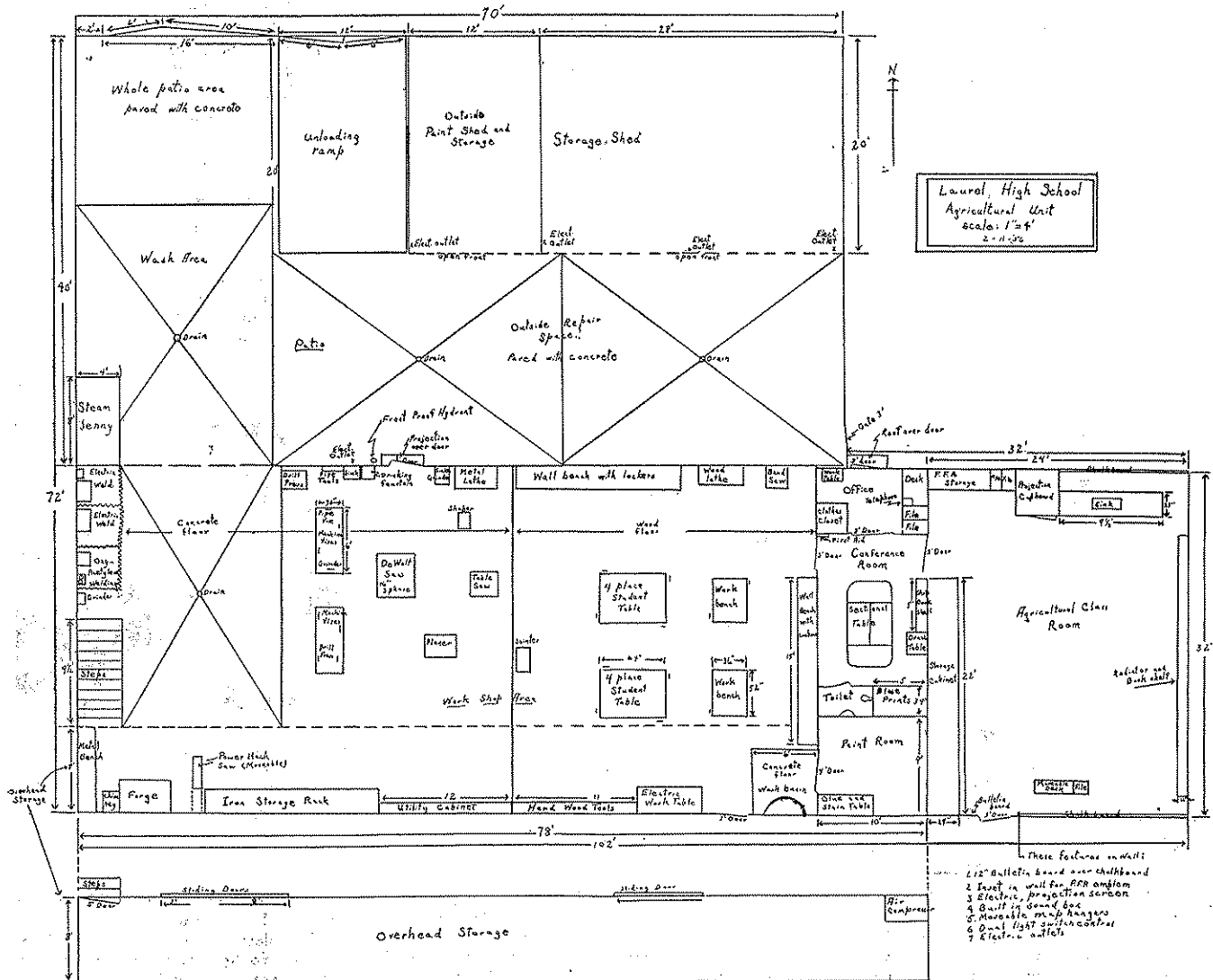
While the floor plans of the new Laurel High School agricultural department shown below will probably not suit any other school, it is hoped they may suggest ideas for further development and improvement.

Importance of Organization

Many good shop techniques have been taught in buildings lacking the desired floor space, ceiling height or window area. We want these things but also we must have an efficient, well organized shop with all the materials we use easily accessible and conveniently located. These are the things many good shop teachers provide in a poor shop building.

Even if a school is located in a town with a lumber yard and a hardware store, it just is not good practice to send one or two boys for a pound of nails or a bolt every time they may be needed. The boy on the street is not learning shop techniques. Discipline problems may arise, and accidents can, do and have occurred on errands of this type.

(Continued on page 157)



Also, bad habits are formed since the farm boy should be taught to keep a supply of what the housewife would call "stables" on hand in the farm shop.

Most teachers now arrange centers or stations where tools needed to perform the job are located. Example: Pipe tools are placed in easy reach of the pipe vise and pipe supplies; welding tools, electrodes, and helmet are within reach of the welder and welding table.

Space for Supplies

A central location for hardware, bolts, nails, screws, and electric supplies is provided in the "utility cabinet" pictured. Each row of boxes will hold a certain type of merchandise. The example shown provides for hardware, which includes all the common items needed about the farm shop such as strap, butt, and Tee hinges, hasps, cupboard turns, corner braces, etc., each in a separate drawer on the top row. Row two contains stove bolts followed by row three for carriage bolts; then machine bolts, screws, nails, washers and electric supplies. Next to the last row is for cotter pins, repair parts, etc., while the bottom row contains rivets of many kinds and sizes. This puts the most used items, nails and screws, at waist height for easy access for freshmen.

Each of the 81 drawers can be divided into compartments as needed, but always according to a particular plan which a student can readily learn. For example, the largest bolt, nail, screw, washer, etc., is always on the left side of the drawer in the front compartment followed by succeeding smaller sizes in the next compartment of the drawer and if the next drawer has the same item as bolts, it will follow the same pattern of graduation according to size. A ruler and diameter gauge are provided on the cabinet as shown so any person getting or returning a nail or bolt, may, if he does not know, check the size. Each drawer is labeled. This cabinet can be made by boys and is adaptable for home use by making some of the drawers smaller than the 10 x 10 x 8 inches used for the school farm shop. The rivet drawers are smaller.

Uses for Color Markings

Similar step-saving arrangements can be devised for quicker, safer work in many shop areas. Color can be put to good practical use by painting all tools



A utility cabinet should provide enough space, properly arranged, to permit storage of each commonly used hardware or other classification of small items.

Examples of Drawer lay-out in Utility Cabinet

5"	4 1/2"	2"	1 1/2"	5"	4 1/2"	2"	1 1/2"
	4"	2 1/2"	1"		4"	2 1/2"	1"
6"	3 1/2"	3"	3/8" Nuts	6"	3 1/2"	3"	1/4" Nuts
Machine Bolts 3/8" Dia.			Machine Bolts 3/8" Dia.		Machine Bolts 1/4" Dia.		Machine Bolts 1/4" Dia.

belonging at one station a certain color, such as blue, while all tools at another station may be yellow. This is especially helpful with pliers or hammers, for example, which may belong at several conveniently located places in the shop and yet seem always to be found at one place if they are not marked. Everybody can soon learn where color-marked tools belong. This method also helps the instructor tell at a glance if all tools are present, especially if silhouettes are used.

Electric outlets of proper phase and voltage should be located near the power tools. This can promote safety as well as convenience by eliminating long extension cords.

A good motto for the shop teacher in *Planning Facilities For Farm Shop Instruction* is "THINK," the same motto many teachers use for the students. It's certainly pleasant to work in a shop where tools and supplies are "in their place." The instructor can usually have this situation with a little foresight and planning. □

Who Should Teach - - -

(Continued from page 155)

seasonal-sequence basis, dealing with operation and preventive maintenance of tractors, land-breaking, planting, cultivating, harvesting and other types of mechanized farm equipment.

Meetings are held in the shops of the schools' departments of vocational agriculture and in the plantation shops in the communities where the students reside and the problems occur. Individual and small-group instruction is given on the trainees' farms. One of the classes meets in the farm shop of two brothers, John Marion and Cameron Dean, of Tibbett, a thriving Community in the Leland School district. These men, two of the "spark-plugs" behind the program in their area, have this to say in regard to the program: "The careful operator needs correct information as well as the 'will-to-do' in order to succeed with preventive maintenance and operation. The results of the program have been gratifying to all concerned. Considering the Vo-Ag program with the adults, good as it has been, it is believed that this program is worth more to the farmer than any other thing that has been done in the Vo-Ag's instructional program." It is obvious that the men are doing a better job with their farm machinery; are happier over it; and they even constructively criticize one another. Let one of them fail to properly operate or maintain his equipment and he is im-

mediately dubbed an "apple-head" by his fellow workers. The fact that our breakdowns have been greatly reduced points to the effectiveness of the program.

The local schools pro-rate the travel costs of the instructor, and the State Vocational Department reimburses the schools for his salary.

The Program Is Growing

Although all farmers in the area have not availed themselves of the opportunity that is theirs in the program, the interest is growing. The statewide program has more than doubled during the present year and there is ever-increasing evidence that the "snow-ball" is growing. Except for one other full-time program that has just been organized, the balance of the classes over the state are organized under the supervision of part-time instructors. It seems that the full-time, organized cooperative programs in the Delta have progressed in a most unusual way. Many factors may have contributed to their success, but probably the principal way in which these groups have functioned differently from the others over the state is the fact that the participating schools have cooperatively employed instructors on a full-time basis. This has enabled the securing of better-trained men who can work with the schools in developing well-organized programs in farm mechanics. It is believed that an assistant to the regular vocational agriculture teacher in this field can tie the program together and make greater headway in assisting the farmer in solving his problems in the operation and preventive maintenance of mechanized farm equipment—problems that are in reality far different from the problems of old "mulepower." □

Farm Mechanics for All

(Continued from page 154)

coming a center for the total development, mental and social, of the people we serve; to help our in-school students and out-of-school adults solve some of their farm problems economically and intelligently; to utilize all available facilities and resources of the county; and to provide an outlet for students and adults with practical ideas—helping thereby to make the farm folk of our community more useful and self-respecting citizens. □

Emphasis has been placed for several years on the evaluation of local departments for Negroes. Evaluation has been emphasized at the Inter-Regional Conferences.

What teachers say about tool storage

A survey of teachers' opinions on tool storage in school farm shops.

BENTON K. BRISTOL, Teacher Education, Penn. State University.



Benton K. Bristol

ONE of the farm mechanics problems of interest to teachers of vocational agriculture is the proper storage of tools. An efficient and effective system developed to meet the specific needs of a particular situation will be an important factor in stimulating student interest and accomplishments.

There are a number of ideas which teachers have found helpful in setting up adequate tool storage programs. Certain management practices have assisted in the successful operation of the established systems.

A study was made of sixty-four school farm shops distributed over eleven supervisory areas of Pennsylvania to determine the following:

1. How tools are being stored in today's school farm shops;
2. The management practices being followed in the operation of the tool systems in use;
3. The advantages and disadvantages of each of the tool storage practices being followed;
4. Implications of the data for teachers of farm mechanics.

Place of Storage

Of the sixty-four school farm mechanics shops included in the study only four made use of toolroom storage exclusively. Two of these teachers indicated they were not satisfied with this arrangement, and had definite plans for utilizing at least some shoproom storage by next year. Thirteen of the school farm shops made use of both toolroom and shoproom storage. The remaining forty-seven schools used shoproom storage of tools exclusively. Several of the teachers indicated that they had tried toolroom storage at some time in the past, but that they found the shoproom storage of tools more satisfactory for farm mechanics classes.

Each tool storage practice has certain advantages and disadvantages. Toolroom storage provides maximum security for tools; makes it easier to place responsibility for loss; gives the conscientious tool checker a chance to identify, fit, and recondition *all* shop tools; allows the tool checker to receive training in tool record keeping; and *under certain situations* may insure the proper maintenance of tools. On the other hand, the following disadvantages may be listed for

this system of storage: The presence or condition of tools may be more difficult to check; student clerks would rather work on their own projects than in the toolroom; students may try to "beat the system;" the student clerk may feel less responsibility for tools he is not using himself; the tool checker for the day (or week) gets behind with his own farm mechanics program; valuable floor space is taken up by the toolroom; the usual line-up of students at the beginning and end of each instruction period is inefficient; and, there is a tendency for all students to move about the shop too much.

Shoproom eliminates the need for student tool checkers and the disadvantages associated with the toolroom system. The two disadvantages of shoproom tool storage are: (1) There may be slightly less security for tools, and (2) the placing of responsibility for lost tools may be somewhat more difficult.

Storage Space

The wall cabinet, floor cabinet, and tool drawer provide protection from dust and loss. Tools are not as easily checked as with other types of open storage, however. Where windows extend from bench tops to the ceiling on two or more walls (as in some new shops) there is little space for wall cabinets. In other situations the wall cabinet provides for somewhat more flexibility than does the floor cabinet. The tool drawer is most useful when it is necessary to store an individual tool kit for each student, but has the disadvantage of being difficult to "keep in order."

The wall panel, portable tool panel (or portable work station), tool rack, and tool shelf make the tools readily available and are easy to check. They give less protection from dust and loss, however. Because of the limitation on the size it should be built, the portable tool panel (or portable work station) restricts the number of tools which can be stored; but, there is greater flexibility in this instance. The portable work station's vise and anvil make it more adaptable in certain situations. The tool rack may often "be in the way," and there may be a tendency for students to accidentally knock tools off the rack. The tool shelf is sometimes useful in storing "hard to hang" or seldom used tools, but is difficult to "keep in order."

The peg board and silhouette ideas are frequently incorporated with one or more of the tool storage systems previously discussed. The peg board is flexible, and the silhouette greatly assists in tool checking. Sometimes the brackets and hangers available for purchase with the peg board have not been

heavy enough for the proper storage of common farm mechanics tools.

Preference of Teachers

In determining the rank-order of each tool storage practice the following items were considered: (1) Actual use of the practice by teachers, and (2) their evaluations of it as to convenience, cost, adequacy, and ease of checking. Under this plan the practices rank in the following order:

1. Wall cabinet in shoproom
2. Wall panel in shoproom
3. Floor cabinet in shoproom
4. Portable panel and portable work stations in shoproom
5. Wall panel in toolroom
6. Floor cabinet in toolroom
7. Wall cabinet in toolroom
8. Tool drawer in shoproom
9. Tool rack in toolroom
10. Tool shelf in toolroom
11. Tool drawer in toolroom

Management practices ranked in the following order according to the number of schools using them: (1) Tools dispensed by self service; (2) tools identified in some way; (3) tools stored according to work areas; (4) tools checked in by both students and teacher; (5) tools checked in by student only; and (6) color scheme of some type used in shop. Ranking far below the practices just listed are: Tools checked in by teacher only; tools dispensed by both tool checker and self service; and tools dispensed by tool checker only.

Implications of the data for teachers of farm mechanics would appear to be as follows:

1. Tool storage requirements in school farm shops are changing;
2. There is general agreement by teachers of vocational agriculture as to the most desirable storage facilities to provide for tools;
3. Shoproom storage is superior to toolroom storage for school farm shops;
4. In certain special situations some combination of shoproom and toolroom storage may be superior to either of these methods used by itself;
5. Portable tool panels (or work stations) are useful in the storage of frequently used tools in certain areas of farm mechanics work, and are desirable supplements to other methods of storage in many situations;
6. The use of the peg board and silhouette is becoming increasingly important;
7. The desirable tool storage systems for school farm shops are: wall cabinet, wall panel, floor cabinet, and portable tool panel (or work station) in the shoproom;
8. Essential management practices relating to tool storage are: tools dispensed by self service, tools identified in some way, tools stored according to work areas; tools checked in by both student and teacher, and the use of a color scheme in the shop. □

Farm mechanics is a "must"

Proper facilities and planning make for satisfying teaching.

RALPH WHITEHEAD, Vo-Ag Instructor, Ovid, N. Y.



Ralph Whitehead

WITH today's large investment in mechanized farming and present high labor costs, the vocational agriculture farm mechanics programs have assumed a role of vital importance. It is the duty and responsibility of the teacher to instruct both pupils

and young farmers in mechanical skills necessary to be modern efficient farmers.

One of the first requirements for a good shop program is proper space. An open area with a minimum of large equipment and furnishings that take up floor space is necessary to work on large projects.

Arrangement of Tools

The second essential for a good shop is an adequate supply of easily accessible tools with which to do the work. During the past two years, I have converted my shop entirely to tool panels. They have proven satisfactory far beyond any expectations. In addition to an approved appearance of the shop, I have gained considerable floor space, increased availability of tools, and have cut tool losses to nearly none. Lack of wall space need not be a problem as the panels can be extended across the lower portions of windows where necessary.

Two tool panels 4' high and 24' long display my woodworking and machinery repair tools quite adequately. Special equipment for welding, spray painting, etc., are put on smaller panels near the work centers. A valance over the panels with fluorescent lights adds to the appearance. I would strongly urge any teacher having a tool storage problem to consider this method. Space in this article does not allow for construction

details, however, I would be glad to send detailed information to anyone interested.

Emphasize Safety

In the interest of the welfare of your pupils as well as a teacher's own professional reputation, safety is an item that can not be ignored. Safety instruction is a continuous process throughout the year. For a teacher the problem has two parts: to develop safe habits on the part of the pupil, and to protect the school in case of an accident. All shop equipment should be in good condition, properly guarded, and pupils made aware of the hazards involved.

Instructional Content

What to teach varies with the needs of the community. It is my opinion that the greatest number of needed farm skills can be taught through the reconditioning of farm machinery. Except for farm structures, soil conservation, concrete work, and a few other areas, I plan to get the necessary skills acquired through repair work. When machinery is in the shop for service a teacher has a good opportunity to teach the maintenance and operation phases.

Pupils will take much more responsibility in shop if they work on their own equipment. When a boy does not have a personal interest in the project, the incentive for doing a good job is not nearly as strong.

Through repair work many skills are gained, but selection, care, and maintenance must not be overlooked. A good shop program is a complete one. A teacher must not spend so much time on one part that several other important areas are neglected. For machinery and motor work a copy of the service manual giving technical and repair data on all makes of farm tractors and motors is indispensable. Many areas of farm mechanics instruction can best be

taught through field trips and farm visits.

Planning Is Essential

Projects should be well planned before the period of shop instruction starts. To do this I use a 5 x 8 inch card for each pupil. This card contains his name, class, and columns for name of the project, time required, and grade. The cards are stored in a rack to make them convenient. Before each class meeting in shop starts all cards can be checked to see that everyone knows what to do. As a pupil completes a project, he gets his card from the rack for grading. After the work is evaluated and a grade recorded, he returns the card to the rack. At the end of the year the card is dropped in the pupil's permanent record folder.

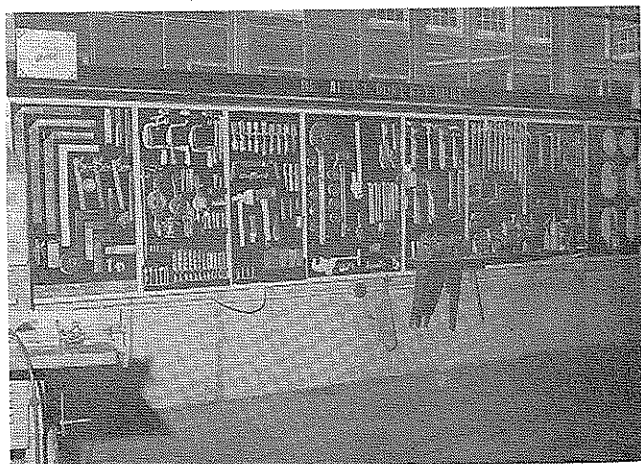
A real shop problem is the clean-up. Make the job easy by keeping your floor space as clear as possible. Then insist that a good job be done. Another advantage of tool panels is that it is easy for pupils to see where each tool belongs and what is missing.

Another very useful device for planning shop projects is a card file with all references on projects listed. A pupil can look his project up in the card index and find the page number of each reference available. It is not difficult to set up such an index using blank library index cards.

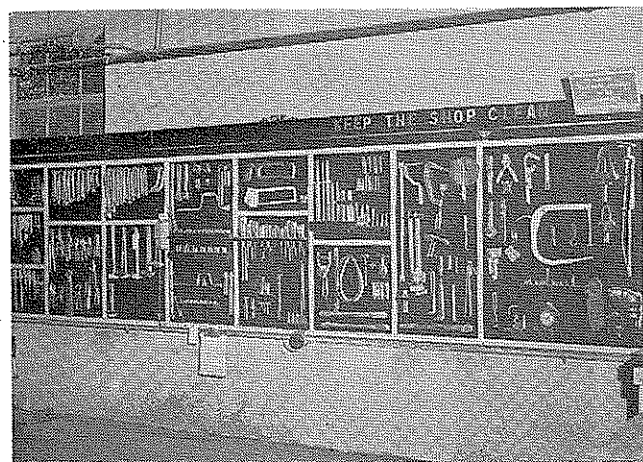
Tools for Home Use

In many circumstances it is desirable for pupils to take tools home to do a job. The improvements that they do at home are an important part of their farm mechanics training. To keep track of loaned tools, I use a system of colored shipping tags. For those persons borrowing tools regularly like school maintenance men, I have a colored tag with their name on it. For those borrowing only occasionally, we use manila shipping tags on which has been stamped a form where the borrower can indicate the date, his name, and name of the tool. When a person removes a tool from the shop he places a tag on the tool outline. At the end of each period all tool outlines must be covered with the proper

(Continued on page 160)



Woodworking and plumbing tool panel. Showing arrangement of tools, tool outlines, and system of tool tags used for loaned equipment. Tools are grouped by kind and use.



Section of the machinery repair group of tools, showing arrangement, tool outlines, and tag system used for loaned tools. Fluorescent lights run the entire length of each tool panel.

A filing system for bulletins

Every teacher has this problem.

WALTER E. ATWOOD, Dir. of Agriculture, Central Union H. S., Fresno, Calif.

ONE of the best helps in teaching Vocational Agriculture and in helping farmers in the community with their agricultural problems is the large number of bulletins and circulars which are available from innumerable sources. It is easy to secure the material, but arranging it in such a manner that it is easily accessible often presents serious problems. I have tried various systems and have had to discard all of them after finding out, the hard way, that they were either too complicated or too time consuming. I have spent a lot of time trying to keep my bulletin material in order, but at the end of each school year I always came up with a hodge-podge of misplaced bulletins. After almost despairing of ever being able to handle this valuable source of information rapidly and efficiently, I worked out an idea which after seven years of use has proven very effective, has presented a minimum of difficulties, and certainly is time saving.

Cabinet Storage

The system which I have worked out is very simple and easy to use. In the rear of the classroom there are eleven built-in cabinets, each 25 inches wide, 6 feet high, and 10 inches from back to front. Each cabinet has six shelves and on each shelf there are eight boxes 7 x 9 x 3 inches in size. The cabinets may be opened or closed by a door. A panel type door adds to the appearance of the room and, extending the full length of the cabinet, is easy to use.

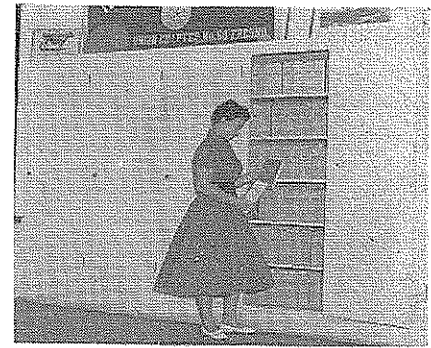
Bulletin boxes may be purchased or built in the school shop, the latter being preferable since they are more uniform and can be built as needed. If the boxes are to be constructed in the shop, a very economical and simple procedure is to make use of scrap lumber cut in strips 3 inches wide by 3/8 inches thick. These strips are then cut to lengths of 6 5/8 and 9 inches respectively. The two pieces of wood thus prepared are then nailed together forming a right angle making a frame 6 x 9 inches to form the front and bottom of the box. Cut two pieces of heavy cardboard 6 x 9

inches and nail to the wood frame making a box open on the top and back. It is well to cover the corners where the wood and cardboard come together with gummed paper after which a 3 inch strip of the gummed paper is applied over the nine inch wood front of the box from the top to about two inches along the bottom surface.

The cabinet doors are numbered from one on up to the desired number with ordinary house numerals which may be purchased at any hardware store. The shelves are numbered from top to bottom with letters A, B, C, etc., and the boxes are numbered from left to right 1, 2, 3, 4, etc.

Index Bulletins

Bulletins are filed alphabetically according to the name of the bulletin and are indexed on 3 x 5 inch cards which are kept in a file on the instructor's desk. When a bulletin is needed, its location is determined by referring to the 3 x 5 index file which gives the number of bulletins on hand, the name of the bulletin, and its location or code number. For example, the assignment is on Soil Conservation. The index cards back of the letter "C" are taken out and the card headed "Conservation" located. Reading down, it is noted there are 17 bulletins listed, entitled "Conservation," including "Making the Most of Our Soil" all of which are located in 4-D-1. Open cabinet number 4, go down to shelf "D," and the bulletins are in the first box on the left which is prominently marked 4-D-1. Each bulletin in the box is also marked with the index code number, 4-D-1, which makes it very easy to return the bulletin to its proper box. Each box will hold approximately 30 to 50 bulletins, depending on their size. Bulletins are NOT placed in the boxes by subjects such as diseases, pests, sprays, etc., as it is just as easy to find them in one box as another. The key to the system is the 3 x 5 card index file, by publication subjects, alphabetically arranged. It is well to cross index thus saving time in locating the bulletin. The one indicated above



Student Secretary removes the desired bulletins from box 4-D-1.

may be listed under Conservation, and also under Soil.

The above system is not only time saving, but is easily taught to the students. Any one who can count from one to eight can return any number of bulletins to their proper place in a very short time. A brush type marking pen is a very valuable aid in marking the bulletins and the boxes. □

Farm Mechanics A Must

(Continued from page 159)

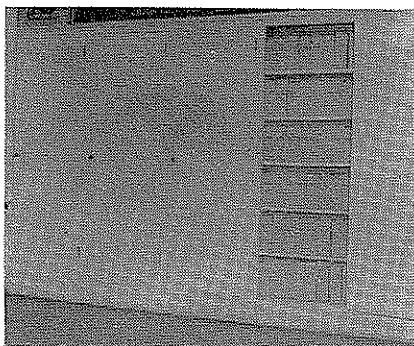
tool, or a tag over the outline telling where the tool is.

Steel parts pans can be purchased very reasonably from any industrial supply house. They are built so that they can be stacked when empty. These pans are indispensable for storing small parts when a machine is torn down.

Important for Young Farmers

The farm mechanics work can be a very important part of the young farmer program. For the past ten years, we have had an annual shop school for members of this group. This repair school is always well attended and serves a very useful instructional purpose.

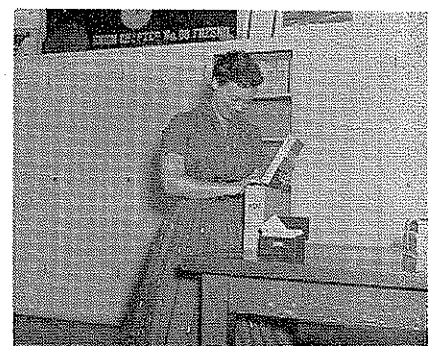
There is no better way to teach pupils habits of good workmanship and responsibility than through a functioning farm mechanics program. These habits, however, will be no better than the standards set by the teacher. I know of no greater satisfaction in teaching than seeing a completely repaired and freshly painted piece of farm equipment leave the school shop ready for efficient and economical performance whenever the need arises. □



Bulletin Cabinets showing location by number with No. 4 open, showing details of placing boxes.



Bulletin file Number 4-D-1 with bulletins on "Conservation" and three by five index file. Bulletins to be filed are at the right of box 4-D-1.



Student Secretary replaces bulletins in box 4-D-1 after they have been used by the students.

Your community can be studied

There are certain precautions to be observed in doing so.

WILLIAM J. ELLENA, Director of Educational Research and Planning,
Baltimore County Schools, Towson, Maryland.

MANY of us who work in the public schools find ourselves inadequately informed about the communities in which we live and learn and work. During recent years we have come to believe that the life of the school is and must be closely related to the life of the community. Yet our knowledge of the specific forces and experiences which touch the daily lives of children is usually sketchy and incomplete. Furthermore, we are not expert in our attempts to increase this limited knowledge. Too frequently our very lack of knowledge leads us to believe that our particular community, unlike other more fortunate ones, suffers from a dearth of significant educative resources. Or, if our common sense frees us from this misconception, we may find ourselves so bewildered by the complexity of forces and activities within the community that we do not see where or how to begin our search for new knowledge with which to work.

Information Must Be Usable

To be of maximum helpfulness, our knowledge of the community must be more than an encyclopedia or catalog of facts. It must be organized in such a manner that it implies and suggests ways in which it may be used. Effective techniques for the discovery of the true community must include means of recording and organizing information in ways suited to its possible uses, in addition to the methods found suitable in gathering the information or data. We must find means by which our knowledge of the community can be made reasonably complete and usable, rather than haphazard and incidental.

Purpose Is Basic

The first point to be considered in preparing for a study of the community is that of purpose. What do we wish to achieve through making the study? What use do we expect to make of the findings? Obviously our awareness of the purpose and the values to be attained may and probably should be modified as the study progresses. Nevertheless, the answers to these preliminary questions are of basic importance, for they influence the decision as to who shall participate in carrying on the study as well as the selection of techniques to be used.

Every school administrator and teacher employs research techniques in studying his community whether he is conscious of it or not. For surely, "research techniques" are simply more or less refined methods of securing information on some particular topic or problem.

Specific Techniques

There are five major ways in which community data may be secured. Though

at times a specified method may be singled out for use, usually a combination of methods is desirable if reasonably complete information is wanted. The methods used are:

(1) *Observation*—This involves gaining information through first-hand contact or direct experience. It may be carried on in a scientific manner, using carefully controlled methods and making possible the drawing of scientific conclusions. Or it may be carried on less formally for the purpose of developing a general appreciation of the situation or thing observed. Both types of observation are valuable but should not be confused.

Conscious effort will need to be made to find ways to check observations for objectiveness. Checking one person's observations against another's, or checking against data collected under more circumstances, are methods that are useful.

(2) *Conference or Interview*—Interviews may be held with people who are themselves the original sources of the information desired, or with people who by profession, occupation, or special interest have become especially informed. They may be carried on in an informal manner with a view to getting whatever information seems important at the moment. Or they may be more carefully planned and conducted with the use of a questionnaire or schedule of items to make certain that all important points are included.

The interview is a fairly complicated method of obtaining information, as well as an interesting one, because of the human relationships involved. Attention will need to be given to the whole question of how to make pleasing and satisfactory contacts with people, in addition to the other problem of deciding what information is desired from them.

(3) *Documentary Research*—Much desirable information is not obtainable by direct observation or by interview or conference. It is to be found largely in the printed and manuscript records which have accumulated locally or in governmental or organizational files. It is of infinite variety, ranging from old letters, diaries, and land grant titles, prized by some local citizens, to the scholarly historical documents found in archival libraries, and the infinitely detailed information collected by the United Census Bureau or published in the *World Almanac*.

Certain of these materials are public property and hence are available to anyone. School or governmental records and library materials are of this type. Others, such as the records of churches, welfare groups, and civic organizations, are somewhat private but can probably be viewed through permission of their leaders. The more personal type of

records, which usually has special significance for local community study, may be the property of local museums or historical societies and is then available to the public. More frequently this type is privately owned and its existence may not be generally known. To gain access to these records requires private information and the effort to arouse personal interest in what the school is doing. In such instances, as in many others, the interview technique is necessary to supplement or make possible the discovery and use of documentary data.

(4) *Questionnaire*—The questionnaire has frequently been used as a separate means of securing information. Because it comes to the person who must give time to filling it in without the benefit of preliminary introduction to arouse interest in it, its value is somewhat limited. Under such a system of use, the planning that goes into it must be carefully done. The purpose of the study must be clear to someone who, presumably, has given it no particular thought; the matter must be presented to him in such a way that he is willing to cooperate; and each item must be so clearly stated that there can be no doubt as to what it means.

Many people have come to believe that a better use of the questionnaire is in connection with the interview. In that case, any needed interpretation can be made by the person conducting the interview, and the data secured are likely to be more reliable. Though suggested forms for questionnaires are available, each group should, for best results, work out its own.

(5) *Schedule or Checklist*—A schedule or checklist of items concerning which information is to be obtained is frequently used as a basis for observation, particularly when a number of people must share in the observation, or it must be continued over an extended period of time. Its purpose is to make certain that there is reasonably complete agreement as to what is being looked for and to make certain that no serious omissions occur. It is helpful in carrying on any type of study because it systematizes and prevents overlapping and serious disagreements.

Summary

Any effective effort to discover the community will involve three major steps: (1) Deciding what purpose or purposes are to be served by such a study; (2) Determining who shall participate in the study and considering the purpose to be served and the nature of the community to be studied; (3) Selecting and developing the specific techniques suited to the study. If these three steps are carried out in the most effective manner, a fund of information will result that is sufficiently well organized to suggest ways in which it may be used for the enrichment of school living. □

A Prosperous
New Year to You!

The "new look" in soils teaching aids

Joint efforts of teachers and soil conservation agencies produce teaching aids.

RALPH E. YOUNG, Vo-Ag Instructor, Holgate, Ohio.



Ralph E. Young

What is beneath the land's surface? How can we provide our students with true to life teaching aids which dramatize the physical, structural and textural goodness of our major soil delininations common in the area where we are teaching? We have all experienced the time and effort involved in opening up soil profile pits not to mention their limitations as to time, place and form utility in group instruction.

A Cooperative Effort

The writer, having been a former Soil Conservationist, was familiar with the use of mounted, natural appearance soil profiles used in the "group approach" method of putting conservation on the land. While taking a graduate course in "Teaching Aids" the idea was conceived of approaching the problem of building soil profiles of natural appearance, mounted with vinylite resin, on a county level for each of the 7 Vocational Agriculture Departments in Henry County, Ohio. Since our county, like most counties in the nation, had a going Soil Conservation District manned by a work Unit Conservationist (Farm Planner), we contacted him and outlined our designs of cooperatively preparing soil profiles of the major soil types in our area. Our work Unit Conservationist contacted the Area Conservationist (a former Vocational Agriculture teacher) who assigned us the Area Soil Scientist to work with us. He was familiar with the procedural techniques and materials needed to prepare soil profile teaching aids for each of the seven Vocational Agriculture Departments in our county. Consideration was given to making this cooperative soil profile collection day open to our entire district of 22 schools. The detailed work involved led us to confine our collections to the seven schools, each school to be represented by their Vocational Agriculture teacher or a working representative from each department.

Supported by Soil Conservation District

Our next concern was who would pay for the mounting boards, cheesecloth and ketone solvents used in providing each Vocational Agriculture Department in our county with at least two soil profile mounts common to the area. After explaining our project to our Soil Conservation District Board of Supervisors, they agreed to pay for all materials which amounts to approximately \$2.50 per soil profile mount made.

Since all Soil Conservation District Governing bodies are looking for ways to promote the need for and acceptance of Soil Conservation in their respective districts, the writer believes that there is not a Soil Conservation District Board of Supervisors in the U. S. who would not rally behind the idea of providing each Vocational Agriculture Department in their district with the necessary technical help and financial assistance to come up with soil profile mounts common to their area or school district. These soil teaching aids would become the permanent property of each Vocational Agriculture Department within the particular S.C.S. District.

Preparing the Profiles

With this "will to do" back of us, our Area Soil Scientist along with our work Unit Soil Conservationist (Farm Planner) selected the farm or sites where soil profile pits were to be opened up. The date was set and notices went out to each Vocational Agriculture Instructor of the 7 schools in our county to "block



Fig. 1. Shaping the profile slice of soil before applying the metal frame.

the day," "be there yourself or send someone to represent your department." Added to this announcement was "be there at 8:30 A.M., bring a shovel or ditching spade, and a gallon jug to hold the vinylite resin." At 8:30 A.M. on the designated date, every Vocational Agriculture Instructor was on the job. Two soil profile pits were opened, 50" x 3' x 5' in size (Fig. 1). The Area Soil Scientist and work unit Soil Conservationist furnished the metal angle iron frames (see Fig. 2), secured the chemical reagents and supervised the procedure step by step until 18 soil profiles were cut out of the soil pits (see Fig. 3), mounted and treated with vinylite resin (see Fig. 4). At this point, after 8 hours of purposeful cooperative effort by 7 Vocational Agriculture Instructors and

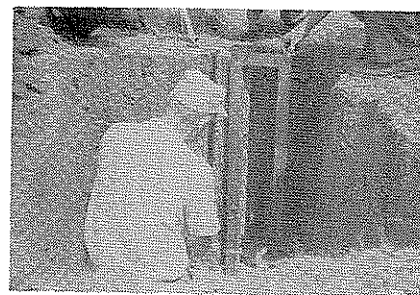


Fig. 2. Placing metal frame over soil profile slice before cutting away from soil pit sidewall.

2 S.C.S. personnel, the 18 soil profile mounts (see Fig. 5) were moved to the respective Vocational Agriculture Departments where each teacher completed the job of painting their soil profile mounts four different times to make complete bonding of the soil aggregates, each possessing the natural colors and appearance reflected in the A-B and C soil horizons.

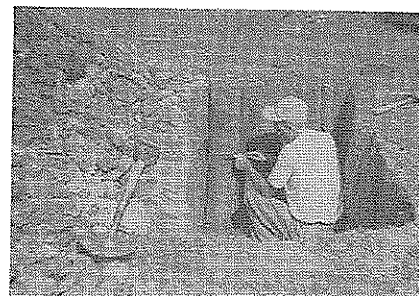


Fig. 3. Blocking out the soil profile with metal frame furnished by Soil Conservation District. Work Unit Soil Conservationist, Jim Huff from Napoleon, is in the pit.

Help Is Available

Why all this detail? It is felt that other Vocational Agriculture teachers throughout the land who would like to engage in this same type of activity could follow the steps our pilot project has taken. The techniques followed by our 7 County Vocational Agriculture Departments, backed by the internal cooperation and support of our local Soil Conservation District Governing body, our Area Soil Conservationist, Area Soil Scientist and work Unit Conservationist, can provide you with soil profiles which permanently retain their natural, physical and structural goodness like those of moist soil, simply by pressing or driving a metal frame made of angle iron into the soil (see Fig. 2). The soil profile mounts are then removed from the soil pits by digging and cutting (see Fig. 3), placed on a board and the surface picked

(Continued on page 163)



Fig. 4. Impregnating soil profile mount with vinylite resin—first application.

A construction problem is solved

The need for a machinery shed was turned into an opportunity for instruction.

J. MARTIN REID, Vo-Ag Instructor, North Dorchester Consolidated School, Hurlock, Md.

THE consolidation of schools in rural areas brings many advantages. In our case, one of these was the addition of a school farm to the Vocational Agriculture program. The farm is composed of twenty-five acres of cropland, fifteen acres of woodland and about twenty acres of spreading campus and playgrounds. This created many possibilities for the agriculture department to put into practice the teachings of the classroom and the farm.

Consolidation also brings its problems. With a farm, we had to have machinery. The solution came relatively easy. With the aid of an active advisory council and county administrators who had an appreciation of an adequately equipped agricultural department, we managed to have appropriated enough money to buy, at cost, the essential machinery. The real problem came when we considered housing that equipment. The farm shop, which is approximately 20' x 60' and completely separate from the classroom, furnished temporary storage, but when classes were scheduled to meet there we were too crowded to conduct adequately our farm mechanics program. This matter was brought to the attention of the school board, but money was very limited. The board was able to appropriate one thousand dollars with the understanding that the department design the building and build it.

Instruction in Planning

The need for the building provided an excellent motivating device for a classroom instructional unit on building construction. The senior class was put to work on it. Fortunately for us, although unfortunate for many local farmers, hurricane Hazel had passed through our area just a few months before we began to plan. Agricultural engineers from the University of Maryland had begun to disseminate their conclusions concerning past farm building construction and new ideas for the future. For this reason, helpful information was easily obtained. The class was divided into committees with one group to report on construction details, one group to determine materials to use, another to figure cost of materials and a final committee to draft the plan. There was much enthusiasm and good sound work was accomplished. The boys did a good job in public relations, for we immediately began to receive calls and visitors regarding general farm building plans.

Students Present Plans

By spring we were ready to present our plans to the advisory council and

school board for acceptance. Just before the meeting, the student chairman of the planning committee, who was to present the plans to the group of local farmers and members of the school board, grew pale and said, "Mr. Reid, I can't tell those people how to do it, they have had many years of experience." My only comment was, "But their buildings blew over." The boy went into that meeting and presented the material, answered many questions and received the green light of acceptance unanimously. School ended that year with our plans ready to be put into force.

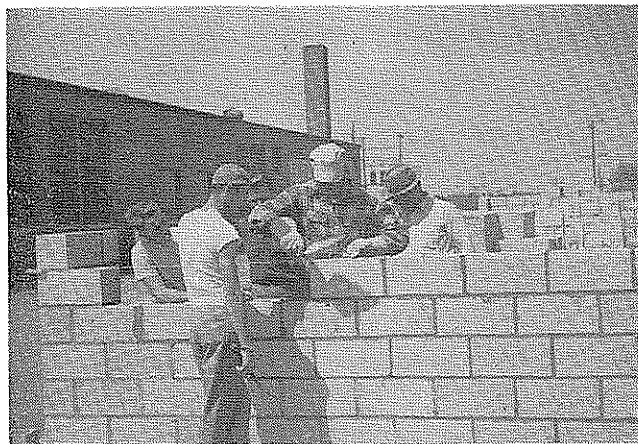
Last fall when school started, we ran our usual schedule on farm work, put on our farm show and taught the usual units of the season in agriculture. As winter drew on the shed plans were brought out and reevaluated and the new group of boys were familiarized with the proceedings. A unit in engineering on the use of the level and rod was taught. One group of boys surveyed the site, another dug the foundation, while a third group secured bids for the materials. The foundation was poured and the project was under way.

Community Participation

About this time the planning committee came up with the idea of holding an old fashioned "Shed Raising" day. Members of the adult class volunteered their services and the FHA girls planned to serve lunch, coffee, and doughnuts. A member of a local contracting firm agreed to act as superintendent of the project. Newspapers and radio stations carried the story. Interest was high. As the planned day drew near even the weather gave us a break and the morning for the "Shed Raising" unfolded into a perfect day. About fifty men, boys and girls were on hand and operation "Shed Raising" was soon under way. Each experienced block layer took a crew of the FFA boys and taught them to lay a block. As the day progressed, more and more boys were taking the trowels and positioning the blocks while the men sat back and drank coffee.

We did not complete the building that day, the roof still remains to be put on, but as the boys say, "That is only a small matter, the real work is done."

As their teacher, advisor and friend, I'm very proud of those boys and am more firmly convinced than ever that our youth can handle responsibility if they are given the opportunity to accept



Vo-Ag students learn to lay building blocks under the supervision of an experienced block layer.

The New Look - - -

(Continued from page 162)

with a sharp instrument so as to expose the natural soil structure. Acetone and methyl isobutyl ketone solutions of vinylite resin are mixed, applied to the soil profile specimen and allowed to harden. Since it is so easy to enlist the support and know-how of your S.C.S. technicians, why worry about all the little details. Just another art of knowing where to get help and the answers when you need it.

Sources of Advice

In case any of our readers desire to pursue this job by themselves, may I suggest contacting K. C. Berger and R. J. Muckenhirn of the Department of Soils, University of Wisconsin, Madison, Wis. Other good library or reference aids may be secured by contacting H. J. Harper, "A Study of Methods for the Preparation of Permanent Soil Profiles," Oklahoma Agr. Exp. Sta. Bul. 201, 1932; W. H. Lyford, "Preservation of Soil Profiles by Voight's Method," Soil Science Society of American Proceedings, 4:355-357, 1940; G. M. McClure and G. D. Convrse, "A Method for Taking and Mounting Monolithic Soil Profile Samples," Soil Science Society of America Proceedings, 4:120-121, 1940.

Teaching, "What is beneath the land's surface," can now be upgraded by fur-

(Continued on page 166)

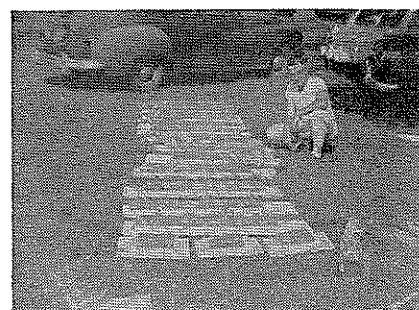


Fig. 5. The results of a full day's work.—Mounted soil profiles for 7 Vo-Ag Departments. Note the miniature soil profile mounts in foreground showing the A, B, & C soil horizons.

it. Where else, but in an agricultural department with a wide awake FFA Chapter, can it better be proven? □

Could you use a civic club?

It developed a rural improvement program in this community.

SAMUEL KEY, Vo-Ag Instructor, Carthage, Arkansas.

ADULT classes of a variety of types have been conducted for individual improvement and enlightenment. In many instances, the class is concerned primarily with the welfare of the members of the group. The Carthage community has had several adult class programs which were designed for the benefit of those participating. Very little of a constructive nature was done toward community development. And this is probably the greatest need in the Carthage community.

Need for a Civic Club

In order to bring about a desire for community betterment, a way had to be devised to secure the joint efforts of rural and town people in a cooperative venture for their mutual benefit. An investigation of the community led the teacher of agriculture to the conclusion that since this small community town of 531 persons had never had a civic club, a lot might be accomplished through such an organization. The Ruritan Club is designed for rural communities and is composed of farmers, business and professional men. It seemed that such an organization had a place in communities such as Carthage.

A meeting of local citizens was held in March 1954 and the reasons and possibilities of such an organization were discussed at considerable length. The group decided to organize immediately. This was done with 23 charter members in the group. Incidentally, this is the first Ruritan Club organized west of the Mississippi River. Since its inception, the club has met monthly on the first Friday evening of the month. The PTA prepares the meal for the group for which each member pays \$1.00. Annual dues are charged also. Attendance at the monthly meetings has averaged sixteen. Although the numbers have not been large, this group has been quite active. It has had a very stimulating influence upon the area. The group is

composed of civic minded individuals who are willing to work. The local Ruritan Club studied town and community needs. Then from this study a program of community development evolved. The club members were placed on committees with certain assigned functions relating to one or more of the areas needing improvement. Each of the Ruritan committees worked with other agencies in the community in an effort to bring about needed improvements. Then the plans, progress, and problems of the committees were discussed at the monthly club meetings. The teacher of agriculture has been the advisor for the group during its entire existence.

Some Accomplishments

Through the efforts and stimulation of the local Ruritan Club, the following community projects have been completed:

1. A clean-up program was instituted with spring and fall campaigns being carried on.
2. Cemetery road markers were erected.
3. School lunch room was remodeled. Estimated value of this is \$2,000.
4. Street improvement. Twenty blocks were blacktopped, 16 blocks gravelled, and three new streets put in.
5. A dump truck was purchased by the town to aid in the clean-up program and in street improvement.
6. Many improvements of two church buildings were made including painting and re-roofing.
7. A country road improvement program was started with nine miles of roads being blacktopped. Fourteen additional miles are now being prepared for blacktopping.
8. A rodeo arena was built by donated labor and with donated materials. It is valued at \$4,000.
9. A new fire truck has been purchased for \$5,000.

During the past year, the Club entered the annual state achievement contest sponsored by the Arkansas Power and Light Company. The Club won sixth place in the state for communities in the 1,000 or less class.

The Program Ahead

A broad program has been approved for the current year. Major items in the program of work include:

1. Improve agriculture in the community through better cash crops, livestock and market facilities.
2. Build a new clinic.
3. Train a firefighting team.
4. Encourage industry to come into the area.
5. Construct a new building to house the fire truck.
6. Highway beautification.
7. Improve local church buildings and grounds.
8. Improve the local park and youth center.
9. Adequately mark roads in the area.
10. Keep the ditches and alleys clean in the town.
11. Continue the road improvement program.
12. Continue the general clean-up campaign.

Some Factors for Success

For a rural community, a Ruritan Club or similar group can offer wonderful opportunities for getting things done provided it is given proper guidance. The teacher of agriculture should not ignore the possibilities of organized effort by adults as a means of fostering community development.

The success of the Carthage Ruritan can be attributed largely to a few major factors. First, the group has had something to do. Results could be seen early. This is a stimulating factor. Careful guidance is essential to see that the group does not go off on a tangent. The social aspects of the organization have been beneficial too. The meal at each meeting has done much to develop a spirit of comradeship. □

The only thing one gets for nothing is nothing.



Street and country road improvements were initiated.



Churches were included in the program.

Who enter teaching?

A follow-up study of agricultural education graduates from the University of Vermont (1949-54).

PAUL HEMP, Teacher Education, Purdue University.



Paul Hemp

RECRUITMENT of students for the Agricultural Education major and the reduction of drop-out of teachers of vocational agriculture from the profession are two problems which confront teacher-education departments and state supervisors in almost

every state in the country. Decreasing drop-outs in the teaching profession may be attacked from two angles. One approach might be to improve the working conditions and pay standards of teachers already engaged in the profession. Another possibility is to do a better job of guidance with students who are trying to decide for or against a career in teaching vocational agriculture. Several studies have been made in some states which were designed to determine the human characteristics and experimental factors associated with success in teaching. A study made recently in Vermont was carried out with such a purpose in mind. Another purpose of this study was to find out what happened to 50 men who graduated from the Agricultural Education curriculum at the University of Vermont during the 1949-54 period.

Characteristics of the 50 Graduates

Only 17 of the 50 graduates studied had taken two years or more of vocational agriculture in high school, but 39 of these men came from farms. The high schools which the trainees came from were spotted on a Vermont state map to see if there was a meaningful pattern of distribution, but none appeared. Some came from out-of-state, and some came from schools which did not offer vocational agriculture. No one area of the state served as an especially fruitful source of students.

Next, we divided the group into two parts—a farm-reared group and an urban-reared group. Table I shows how these two groups differed with respect to the present job status of the graduates.

Table I shows that a much higher percentage of farm-reared graduates are still involved in teaching vocational agriculture. Over half of the urban-reared graduates have left teaching for other jobs.

Looking again at the entire group of 50 graduates from the University of Vermont during the 1949-54 period let us see how many are still teaching. A review of their job status shows us that:

40% never taught vocational agriculture

TABLE I. A comparison of farm-reared graduates and urban-reared graduates in Agricultural Education, University of Vermont, 1949-54.

	Farm-Reared 39	Urban-Reared 11
Per cent who never taught vocational agriculture.....	41%	36%
Per cent who left teaching.....	23%	55%
Per cent still engaged in teaching vocational agriculture	36%	9%
Total.....	100%	100%

30% have left vocational agriculture teaching

30% are still teaching vocational agriculture

For purposes of comparison the men were divided into three groups. Group A included those men still engaged in vocational agriculture teaching. Group B was made up of those who had left teaching, and Group C included those who became qualified to teach vocational agriculture but never taught. Table II was prepared to show how these three groups compared with respect to certain aspects of their background and training.

who have remained in teaching are, for the most part, farm-reared.

- The study of vocational agriculture in high school and membership in the FFA were not good predictors of whether or not these men would take teaching jobs, but may have been correlated with tenure in the

profession for those who did enter teaching.

- Grades received at the university by this group of men were not related to their decisions to remain in teaching or to enter the profession of teaching.

Conclusions

The findings of this study cannot be generalized beyond the group studied since the sub-groups were too small and randomness was not observed. The following conclusions have been drawn from the study.

TABLE II. A comparison of graduates (1949-54, UVM) who are still teaching with those who have left teaching and those who have never taught.

	Group A. (still teaching) (N=15)	Group B. (left teaching) (N=15)	Group C. (never taught) (N=20)	All Ag. Ed. Graduates 1949-54 (N=50)
A. Farm-reared:				
Number	14	9	16	39
Per cent	93	60	80	78
B. Had 2 or more years voc. agr. in high school:				
Number	6	3	8	17
Per cent	40	20	40	34
C. Had 2 or more years membership in high school FFA:				
Number	5	3	3	16
Per cent	33	20	40	32
D. Mean university grade average:	78	79	80	79
E. Mean grade in student teaching:	85	88	84	86

From Table II we learn that Group A includes a higher percentage of farm-reared men than do Groups B or C. The study of vocational agriculture and membership in high school FFA Chapters do not characterize any one group more than the others. Grade average, either university or student teaching, is not a selective factor within the group studied. The data in Table II may be summarized as follows:

- The teachers included in this study

- Graduates in Agricultural Education at the University of Vermont during the period 1949-54, came from all parts of Vermont and from out-of-state areas. Some high schools did furnish several students.
- Most of the men included in this study had farm backgrounds, but only one-third had taken vocational agriculture in high school or had

(Continued on page 166)

News and Views of the Profession

Slaven Joins Arkansas Staff



Joe J. Slaven

JOE J. SLAVEN joined the staff of the Department of Vocational Teacher Education of the University of Arkansas, June 1, 1956.

A graduate of the University of Arkansas, in 1938, he taught Vocational Agriculture at Marblevale for seven years and at

Siloam Springs, Arkansas for nine years. He earned the Master of Science Degree from the University of Arkansas in 1951.

Slaven has been quite active in professional affairs. He has been board member and vice-president of the Arkansas Vocational Agricultural Teachers Association. Currently, he is serving on the Governor's Committee on Vocational Education and as a board member of the Arkansas Vocational Association. He has been president of his classroom teachers' association and vice-president of the county educational association.

Mr. Slaven is filling the vacancy created by Dr. LaVan Shoptaw who is returning to private life. □

Hemp Joins Purdue Staff

DR. Paul Hemp, formerly head of the Agricultural Education Department of the University of Vermont, is now a member of the Department of Education staff at Purdue University in Indiana. Hemp began his duties in Agricultural Education last September. A considerable portion of his work is in itinerant teacher training, a form of in-service education for teachers which has characterized the Indiana program for a number of years.

Dr. Hemp spent one year at the University of Vermont following his doctoral work completed at the University of Illinois where he was a graduate assistant in the Division of Agricultural Education.

Justin R. Tucker Dies

JUSTIN R. TUCKER, formerly assistant State Supervisor of Vocational Agriculture in Arkansas, died Tuesday, September 18 in a hospital at Fayetteville, Arkansas, after a brief illness.

Mr. Tucker, a veteran of more than thirty years of service in vocational agriculture, retired from the profession in December 1952, due to poor health. Following his retirement he made his home in Fayetteville, Arkansas, where he was engaged in the real estate business.

He began his teaching career at West-ern Grove, Arkansas, and, during the ensuing years, he taught at Kingston, Hindsville, McCrory, Augusta, Green

Forest, and Star City. He produced three American Farmers and several State Farmers. He took the first judging team from Arkansas to the American Royal in Kansas City. In 1941, he was employed by the State Department of Education as District Supervisor in the O.S.Y.A. training program and later as assistant supervisor in charge of adult farmer training.

Funeral services were held in the Central Methodist Church in Fayetteville where Mr. Tucker had been an active member. □

H. H. Gibson

H. H. Gibson, head of the Agricultural Education Department from 1921 until his retirement in 1951, died last October 25, after a lengthy illness.

Born in Ohio, Professor Gibson grew up on an Ohio farm and taught in Ohio rural schools. He later attended Dennison University where he earned an A.B. degree in 1909. The next three years were spent at Columbia University where, in addition to his studies, he was employed part-time as a director of work for men and boys in the Men's League of the Madison Avenue Baptist Church of New York City. He was awarded the M.A. degree in Education and Psychology by the University. While attending Columbia, he became interested in the agricultural education movement and spent the next two years at Cornell University studying agriculture and agricultural education.

Before coming to Oregon State College in 1921, Professor Gibson was agricultural instructor for two years in the State Normal School at Kearney, Nebraska, and later in the high school at Ames, Iowa, for two years. During this latter period, he served as Assistant Professor of Agricultural Education at Iowa State College in charge of all special methods courses and supervised teaching. He was State Supervisor of Vocational Agriculture in Vermont for two years and then served as Head of the Department of Agricultural Education and Professor of Vocational Education at the University of Arizona.

He was a widely recognized authority in agricultural education. He had served as a guest instructor in summer sessions at Colorado A & M, at the University of Hawaii, and at the University of California. He was a member of the Washington, D. C., committee which wrote the 1940 federal bulletin on Objectives of Vocational Education in Agriculture, and he contributed considerable material to other federal bulletins relating to this field. The History of Agricultural Education in Oregon published by the Federal Bureau for Vocational Education was written by him. He was chairman of the Committee on Teaching Aids and Materials for the Pacific Region for years and served four years as special editor for the supervised farming practice section of the *Agricultural Education Magazine*.

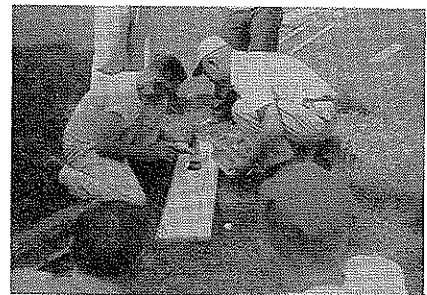
His co-workers in agricultural education, in grateful recognition for services rendered to agricultural education and agriculture and to the farm people of the United States of America, gave him a distinguished service certificate in April, 1954. He received the degree of Honorary American Farmer from the National Association of the Future Farmers of America in October, 1952.

Are Your Receiving Yours?

The Farm Division of the National Safety Council, which publishes *Farm Safety Reviews*, has announced that this publication is to reach every vocational agriculture department with each of the quarterly issues. This service is made possible through the courtesy of Nationwide Insurance Company which has its own safety department directed by Harry M. Pontious, a member of the National Council for Farm Safety.

The New Look - - -

(Continued from page 163)



Saturating cheese cloth with vinylite resin before placing soil profile slice on it.

nishing the teacher with greater resources and opportunity at his fingertips. Surely all-day, part time and adult students will be blessed with more interest through understanding of our heritage, the good earth, when every Vocational Agriculture Department in the country has prepared soil profiles for use as teaching aids. □

Who Enter - - -

(Continued from page 165)

been members of high school FFA Chapters.

3. Only 30% of the men who graduated in the Agricultural Education curriculum during the 1949-54 period are currently engaged in vocational agriculture work; however, five of the men are presently in the armed forces.
4. Most of the men in this study who have remained in teaching have been farm-reared.

It is evident that the problem of decreasing drop-outs among teachers of vocational agriculture involves more than pre-service guidance. Another important phase of the problem is to determine why some graduates never go into teaching and why others leave it. If over half of our graduates are to find employment eventually in jobs other than teaching, perhaps the training program should be changed to prepare them better for these other jobs. □



RURAL WATER SUPPLY AND SANITATION, second edition, by F. B. Wright, pp. 347, illustrated, published by John Wiley & Sons, Inc. Price, \$4.96.

This is a new edition of a book which is familiar to many teachers of vocational agriculture. Subject matter and illustrations have been brought up to date.

Part One of the book includes the following chapters: Importance of Water; The Nature and Sources of Water; Development of Sources of Water; Water Treatment; Problems of Head and Pressure; Pumps, Types and Principles of Operation; Water Systems, Types and Principles of Operation; Typical Water System Installations; Maintenance of Water Systems; Plumbing Systems for Homes and Farms; Sewage and Garbage Disposal.

Part Two consists of a selection of important jobs connected with water supply and sewage disposal. The tools, materials, and procedures to be used have been given for each job.

This publication is one of the Wiley Farm Series designed for agricultural students, farmers, and persons engaged in farm service employments. It is well written and contains many excellent illustrations. Teachers of vocational agriculture should find this to be a very useful reference on farm water supply problems.

Forrest B. Wright is Professor of Agricultural Engineering, New York State College of Agriculture, Cornell University, Ithaca, New York.

—A.H.K.

AGRICULTURE IN OUR LIVES by George P. Deyoe, pp. 638, illustrated, published by Interstate, Danville, Illinois. Price \$4.40.

Agriculture in Our Lives was written primarily for use in teaching courses in general agriculture to persons who want a course in agriculture but do not wish to enroll in vocational agriculture courses. Certain chapters in the book should also prove very useful to teachers of vocational agriculture for the regular vocational agriculture classes, especially for Agriculture I. Many vocational agriculture students may be interested in reading the book to learn about farming in the United States outside of their home communities.

The phases of agriculture highlighted in this book are believed to be important in the general education of all persons, urban as well as rural. Technological changes of special significances in farming, marketing and consumption of agricultural products, conservation of soil and other resources, occupations related to farming, developments in rural life, the economic side of farming and its

relations to consumers and national and world relationships are among the more important phases discussed in this comprehensive treatment.

Chapters included in this publication are: Agriculture Today; Life in the Country; Youth in Rural Life; Careers in Agriculture, Beautifying Home Grounds; Raising Foods for the Family; Conservation; The Mechanical Age in Farming; Getting Acquainted with Farm Animals; Improving Herds and Flocks; Feeding Livestock; Caring for Livestock and Their Products; Healthy Herds and Flocks; Getting Acquainted with Farm Crops; Improving Farm Crops; A Fertile Soil for Better Yields; The Cluture of Farm Crops; Weeds as Plant Enemy Number One; Insects; Diseases of Farm Crops; Managing the Farm Business; Marketing Farm Products; Cooperatives in Rural Life; A Changing Agriculture.

The language and writing style of this book are particularly suited to the intended reading group. Over 400 photographs and illustrations from all parts of the United States have been used to bring the written word to life for the reader. Many "human interest" items about agriculture are featured throughout the book. The suggested activities at the end of each chapter will help teachers guide their students in obtaining personal, meaningful experiences in the area involved.

George P. Deyoe is well known to teachers of vocational agriculture through use of his other books in agriculture and agricultural education. He is Professor of Agricultural Education in the Division of Agricultural Education, University of Illinois.

—A.H.K.

PROFITABLE FARM MANAGEMENT by Hamilton and Bryant, pp. 394, illustrated, published by Prentice-Hall, Inc. Price, \$4.80.

This book is divided into four parts. Part I includes four chapters on planning a start in farming. Consideration is given such topics as planning farming programs, deciding on farming as an occupation, and ways of getting started in farming.

Part II contains seven chapters dealing with planning the farm business. Topics discussed are deciding on family goals, volume in the farm business, farm credit, selecting a farm, renting or buying a farm, farm accounts, and planning the farm business.

Part III presents a discussion of the following topics dealing with improving the home farm: surveying the farm; analyzing the farm business; planning the cropping system; fitting livestock into the farm plan; use of farm power and machinery; farm labor; farm buildings; and marketing.

Part IV provides brief discussions of farm legal problems, farm organizations, and the farmer and his community.

This publication is well written and contains a great many photographic illustrations. Although the major emphasis is on the principles of efficient farm management, the authors have pro-

vided many definite ideas for application of these principles to farm problems and have suggested ways for attacking farm management problems. The organization of the book lends itself well to teaching vocational agriculture classes. Teachers of vocational agriculture should find this book worth examining for possible use as a reference for high school and young farmer classes.

James E. Hamilton is Director, Vocational Agriculture Department, Audubon High School, Audubon, Iowa. W. R. Bryant is Vocational Agriculture Instructor, Canton, South Dakota.

—A.H.K.

DISEASES OF FRUIT CROPS by H. W. Anderson, illustrated, pp. 501, published by McGraw-Hill Co., Inc. Price, \$8.50.

The fruit crop diseases discussed are those of pome fruits (apple, pear, and quince); stone fruits (peach, cherry, plum, apricot, etc.); brambles (raspberry, blackberry, and dewberry); grapes, strawberry, current, gooseberry, cranberry, and blueberry.

The presentation for most of the diseases includes the history, economic importance, symptoms, causal organisms, hosts, morphology, disease cycle, control, and a list of references.

This work is well written and contains many excellent illustrations. A wealth of information on fruit diseases is brought together in one volume for handy reference. The book is designed for teachers, research workers, and practicing horticulturists. Vocational agriculture teachers will find it of value as a special, supplemental reference.

Harry W. Anderson is Professor of Plant Pathology, University of Illinois.

—A.H.K.

APPLIED ANIMAL NUTRITION by E. W. Crampton, pp. 458, illustrated, published by W. H. Freeman and Company, San Francisco. Price \$6.50.

This is a college text in agricultural science. It does have chapters and sections of interest and value to teachers of vocational agriculture.

The book is divided into four main sections. Section I consists of a definition and appraisal of the terms and expressions used in describing feedstuffs. Section II provides a discussion of the nutritional requirements of animals and a chapter on feeding standards. Section III contains several chapters on the nutritional characteristics of some common feeds. Section IV presents a discussion of ration formulation. Separate chapters are devoted to flexible formulas for cattle meal mixture and swine meal mixtures. Miscellaneous feeding guides, including some rules of thumb, are given in the appendix.

Since this is basically a college text, teachers of vocational agriculture may wish to use it only as a specialized reference or a personal reference. The book is well written and illustrated.

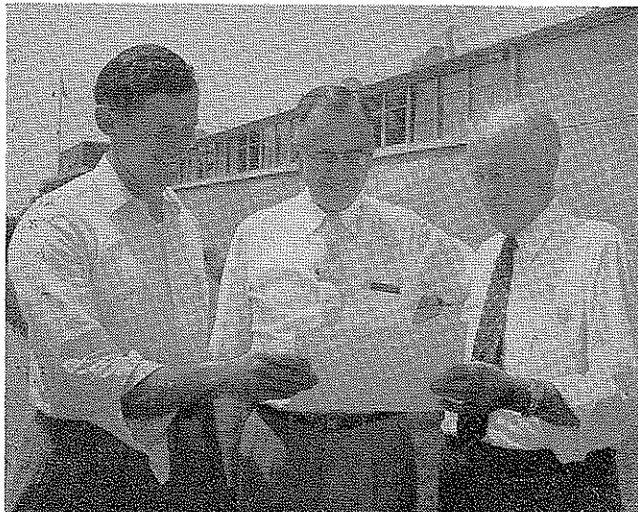
E. W. Crampton is with Macdonald College of McGill University, Quebec.

—A.H.K.

Stories In Pictures



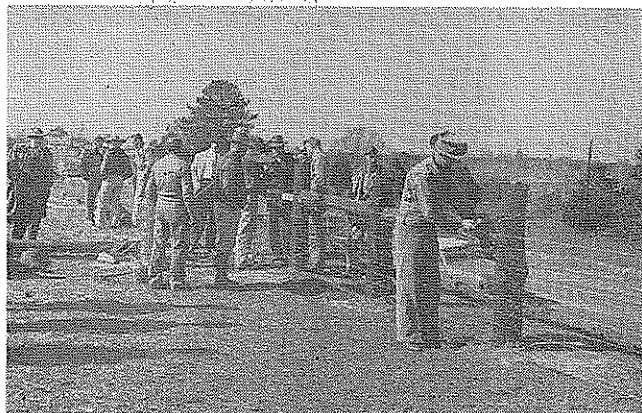
A home-farm shop developed as an improvement project in the farming program of Gene Neef, high-school student of vocational agriculture in his senior year at Mahomet, Ill. Shown with him is Kenneth Knell, his teacher of vocational agriculture. Many mechanical jobs are performed in this shop by Gene and his father. Gene started to develop this shop as an improvement project in his first year of vocational agriculture. This particular shop is located in a corner of a machine shed. About 80 per cent of the students in vocational agriculture at Mahomet develop home-farm shops as parts of their farming programs. Most of them start this activity in the first year and continue to develop it in successive years. (Photo by George P. Deyoe, University of Illinois)



A. F. "Charley" Davis, right, of the Lincoln Electric Company was the recipient of a special citation from the Ohio Vocational Agriculture Teachers' Association. Left to right are: Jack Nowels, President Elect, Loudonville; Dr. A. W. Tenney, Program Specialist, U. S. Office of Education, and toastmaster at the annual banquet of the O.V.A.T.A.; and Davis.



At Mississippi State College, prospective teachers of Vo-Ag get participating experiences in working with adult farmers. Mr. John T. Bonner, a senior trainee in agricultural education, is demonstrating correct welding procedure to an adult farmer who is enrolled in an adult farmer class in farm mechanics at Caledonia Vocational High School. Note: Farmer is not wearing welder goggles. This oversight in safety precaution was called to the trainee's attention by the supervisory teacher-trainer.



Proper construction of fences is taught to Mississippi Vo-Ag teachers during in-service workshops. (Mississippi Vo-Ag Education Department Photo)



Farmers in Mississippi receive special training in maintenance and care of farm tractors and machinery of all kinds. Here a group receives instruction from a special Vo-Ag farm mechanics instructor on the ignition system of a tractor. (Mississippi Vo-Ag Education Department Photo)