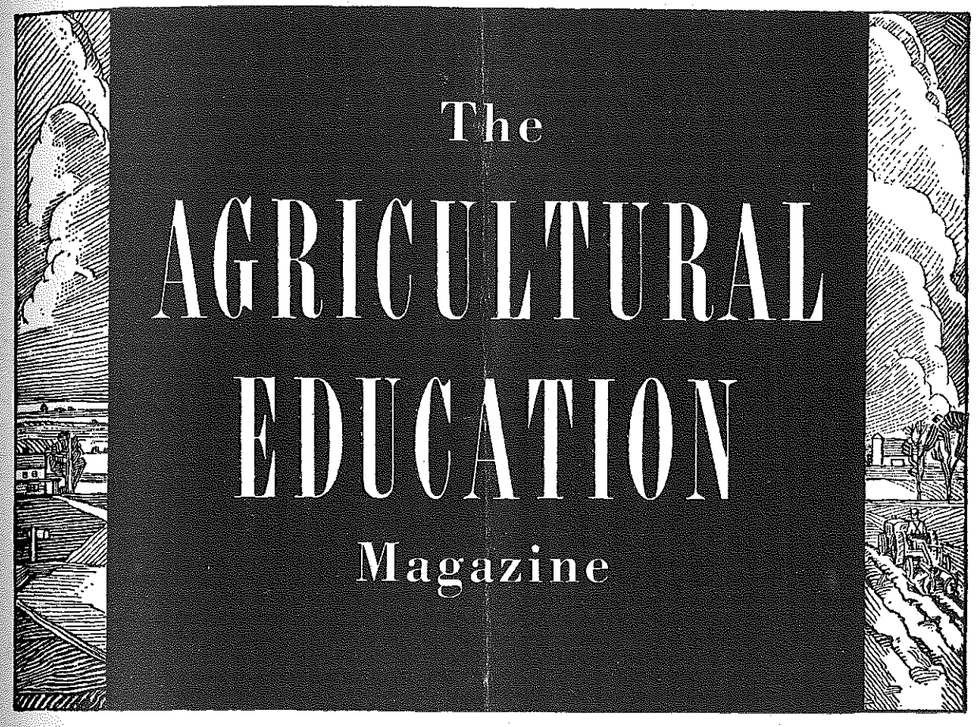
Vol. 17 September, 1944 No. 3



The AGRICULTURAL EDUCATION Magazine

Pedagogically speaking,
the difference between a rut and
a grave is merely a matter of time.

VOCATIONAL AGRICULTURE
For
TEACHERS
Teacher-Educators
And Supervisors
OFFICIAL PUBLICATION

The Agricultural Education Magazine

A monthly magazine for teachers of agriculture. Managed by an editorial board chosen by the Agricultural Section of the American Vocational Association and published at cost by the Meredith Publishing Company at Des Moines 3, Iowa.

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Entered as second-class matter January 21, 1929, under Act of Congress, March 3, 1879, at the post office, Des Moines, Iowa.

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Editorial Comment

Teacher-Training Ahead

PRECEDING editorials have presented the postwar problem of restoring our vocational program in the high schools to conditions suitable for high standards of performance. The responsibility for this change seems to rest with our state directors and state supervisors. It is a task that calls for *courage, firmness,* and *good judgment.* It is for such qualities that high salaries are paid administrators. They must not fail in this hour of opportunity. But, what of teacher-training?

During the low tide of student enrollment in teacher-training, every department should evaluate very critically its program with reference to objectives, procedures, and achievements and determine the changes which will make for the greatest contribution to a virile vocational education in agriculture after the war. As in supervision, so in teacher-training, the philosophies and programs vary in the several states. This is well. There should be no program of teacher-training standardized nationally. The direction of changes and the degree of improvement can be determined only on the basis of an analysis of a given program. As a basis of comparison, I am presenting some of the activities of our department at Ohio State University, looking toward the postwar period. Fortunately, to this end, we have the benefit of three timely studies made by two members of our staff which are yielding us valuable service in this period of severe reappraisal and reorganization.

Predicting Trainee Success

Our first guide is negative. In a study by Rhoad, attempting to find a relation between pre-service achievements and success in teaching, as a basis of predicting the success of trainees before they go on the job, no significant relationships were found. Of a list of 12 factors, such as college point-hour ratio, grades in agricultural education and student teaching, and intelligence-test score, each was correlated with the success of the trainee as a teacher as rated by his supervisors. In no case was a correlation as high as .50 (r=.50) found and only one was found above .35. These findings, tho disappointing, confirm the findings of studies in general education, so we leave that area for others to explore further.

Improved Student Teaching

In the chief responsibility of teacher-training departments, the preparation of students for their jobs as teachers, there are two major areas to be considered: (1) the experiences provided the student in the professional area, including both courses and participating experience or student teaching, and (2) the preparation of the student for his job thru the basic and technical courses in agriculture and related fields. In a study made recently, Bender ascertained from teachers on the job (but with less than five years experience) their evaluation of a large number of student teaching experiences. The highest ratings were given in the areas involving the all-day teaching program and the supervision of farming programs; the lowest ratings in young farmer and adult farmer areas. The study indicates that our teacher-training program should provide (1) more participating experience, and give more responsibilities to the trainee, (2) a better balance of participation and activities thruout the year but especially in the activities during the opening weeks of school, (3) earlier contact by the trainee with the professional training program and particularly with the activities in a department of vocational agriculture, and (4) more emphasis on guidance in the earlier phases of the training program.

In the application of these findings we are considering three major changes: (1) a complete reorganization of courses basic to the student teaching experience, (2) a quarter of student teaching experience requiring residence in a training school community during the junior year, and (3) a quarter of residence in selected departments out in the state under the supervision of the local teacher during the senior year. The training quarters. To these ends conferences of the training staff with the administrative staff of the college are already in progress.

Improved Technical Preparation

The crying need of teachers of agriculture generally is for better understandings and increased abilities in the field of practical agriculture. Remarks supporting this include "I learned more practical agriculture in my quarter in the training school than in any two quarters in college"; and "I learned more about farming in my first two years on the job than I did in my entire college course." As a basis for our procedure in this area, we have the benefit of Rhoad's dissertation which was most revealing even tho conducted under the handicap of approaching wartime conditions. His study dealt with the measurement of abilities in technical agriculture attained by our trainees previous to their quarter of student teaching.

In brief, his study proposed the determination of eight types of abilities adjudged essential to all trainees in seven areas of applied agriculture and then to ascertain which of these abilities a trainee possessed to a satisfactory degree. In the dissertation the scope was limited to determining the number of desired *manipulative abilities* every trainee had in the *seven areas* and determining *all* the eight *types* of abilities the trainees possessed in the one livestock area of *swine management.* At the beginning of their quarter of student teaching the trainees gave the information from which were interpreted the abilities that they possessed in the various areas. Detailed findings are irrelevant. Suffice it to say that on the average these prospective teachers possessed to an approved degree only 51 percent of the 557 manipulative abilities adjudged essential. The performance test would, of course, have been more favorable had it been given at graduation. Nevertheless improvment needs to be made.

We are approaching this problem of improving our trainees in technical information by holding conferences of the staff in agricultural education with college administrators and with each departmental staff at the college. The reaction on the part of each and every department is most favorable. The scope of improvements in the technical fields is indicated by the following proposals:

1. Providing trainees, as early as they elect their major in agricultural education, with an appropriate list of abilities needed by teachers of vocational agriculture to give purpose to their college courses and to encourage desirable self-education thru better selected farm experiences in summer.
2. The elimination of prerequisites to certain technical courses; for example, "Milk Secretion" is removed as a prerequisite to "Dairy Cattle Management."
3. The inclusion of additional technical courses in the vocational curriculum; for example, "Construction of Labor-Saving Devices" is suggested in Agricultural Engineering.
4. Changes in the content of technical courses offered to include more information useful to teachers of vocational agriculture; for example, laboratory work in machinery repair will be introduced in Agricultural Engineering and experiences in such tasks as docking and castrating in courses in Animal Husbandry.
5. Offering certain courses in sections cataloged as "For prospective teachers of vocational agriculture," one or two quarters each year; for example, a section of "Animal Breeding" open only to prospective teachers.
6. Improvement in the methods of teaching technical courses.
7. The offering of more special courses, one-half term in length, during the summer as service courses to teachers of vocational agriculture.
8. The offering of special training by extension specialists and college instructors for groups of teachers out in the state, such offerings to include one or two sessions held week ends or during the summer.

Additional ways and means may be suggested but at present these have been definitely considered. Combined with the excellent attitude on the part of each departmental staff these results give us hope for an improvement in the preparation of

S. S. SUTHERLAND

Professional

HENRY S. BRUNNER

Developing Successful Partnership Agreements in Farming

PROF. E. B. HILL and PROF. L. H. BROWN
Department of Farm Management, Michigan State College

E. B. Hill

L. H. Brown

ONE of the difficult periods in the history of many farms is the period when the farm is in the process of being transferred from one generation to the next. Often the opportunity offered is not attractive enough to encourage any of the children to continue on the farm, so they leave home and become established in other lines of work. Consequently, when the parents reach an age when they must retire from active farm work the farm must be rented or operated by hired help. This often gives rise to conditions which allow the farm to be run down and threaten the security of the parents in their latter years. The agricultural industry cannot afford to have a large number of farms depreciate and erode every generation if there is any practical way of avoiding it. Encouraging a son or son-in-law to stay on the farm by establishing a sound family partnership is a step in the right direction.

This problem of partnerships within farm families is particularly important at this time. The average age of farmers has been increasing for the past decade or two indicating that the depression was not a very good time for most farmers to retire and live on a landlord's income. Then, since the war began, farmers who have reached a retirement age are forced to stay "in the collar" due to labor shortages and the demand for more and more food. It looks, therefore, as tho we have built up a backlog of farm transfers during the past few years that is apt to descend on us about as soon as demobilization following the war gets under way. Family partnerships can play an important role during this period.

The real test of a sound family partnership is "Will it work to the satisfaction of the parties concerned?" There are many types of partnerships which meet this test. It is not intended to infer that any type is particularly superior to another. Our purpose here is (1) to point out some of the important essentials to consider in forming a farm family partnership and (2) to present a form of a 50–50 partnership which is workable and

Essentials to Successful Partnerships

1. *Are the partners ready for partnership?* Under wartime conditions, many fathers and sons are ready to go into partnership but hesitate to make many changes because the son may be called into service. If a partnership is to be formed under these conditions some kind of a bonus system might more nearly serve the purpose. This might be based on a wage allowance plus a share of the net income for the son with the understanding that he would not acquire an interest in the personal property. Such a division of earnings could well be based on the net returns from the business after all expenses were paid and the father was allowed pay for his labor, depreciation on his buildings and machinery, and interest on his investment. In such a system the net income should take into consideration the change in the inventory value of livestock and feed between the beginning and the end of the year.

The partnership operating agreement which is described in this article assumes a permanent relationship between father and son, with the son acquiring half ownership in the personal property. Such a partnership is not so satisfactory for a one- or two-year proposition. If the agreement is going to be of a permanent nature, it is desirable that the son be reasonably mature in his judgment and quite thoroly convinced that farming is to be his life occupation. The father should be aware that it may be necessary for him to make some sacrifice during the early years of the partnership and the son should understand that more responsibility will rest on him in the later years.

It is probable that some sons are ready for a partnership when they finish high school. Others may not be ready to settle down to the routine of the business of farming until several years after they are out of high school. In some cases, boys aren't ready for partnership until after they are married. It must be remembered that the son's wife must fit into the partnership also. For this reason many fathers prefer to wait until after the son marries before going into partnership.

2. *Can the partners get along together?* In some respects going into a farm partnership is like getting married. In either case both members have to be able to give and take in the matter of making decisions. There is no way to make the agreement so that all decisions will be made automatically. Judgment is involved in making decisions and it must be recognized that human beings sometimes make mistakes—fathers make them and sons make them.

It has been observed that some folks avoid mistakes that fathers have made by following the father's suggestion. The father, on the other hand, will be asked to try some new ideas that the son may have picked up in school or elsewhere. Regardless of who makes the decisions, whether they turn out to be good or bad, it should be recognized that they were partnership decisions, not individual. In other words, both partners must refrain from the "I told you so" attitude if the partnership is to be a happy one.

3. *Is there housing space?* No house is large enough for two families even for a short period. Many examples could be cited on this point. We have observed many cases where partnerships have almost "gone on the rocks" when a son has brought his bride home "for just a few weeks while we are getting the other house fixed up." It is our observation that it would be advisable to have that "other house" fixed up under the supervision of the bride while she is still a "bride to be" so she would not have the memory of two unpleasant months of living with her husband's parents. Readers who have not observed situations of this type may believe that we are unduly cautious but be assured that these statements are based on sufficient observations so we feel sure of their validity.

Some farm homes are large enough so that the house can be divided into two apartments to provide separate living quarters. This arrangement is particularly good when parents have reached an age where it is advisable to have a younger person close by. If two apartments are provided, separate entrances should be available. Someone has said of such an arrangement that "there should be separate apartments from the basement to the roof, and if there is a doorway between, it would be best to put the piano in front of it." One young couple observed that they liked the two apartment arrangement because it was easy to leave the children with the parents if they wanted to go out for an evening.

From observation, we believe that generally the most satisfactory arrangement is two separate houses. If these houses can be some distance apart, it is often desirable. Some folks believe that it is best if the houses are located on opposite sides of the farm. This, of course, may present certain disadvantages in doing chores.

All in all, the housing proposition is an important one that must be settled by the individuals involved. We are sure that two families should not try to live close together.

4. *Is the business large enough?* If a partnership is to be successful, there must be enough income to support two families. Generally, both partners work on the farm and, therefore, the amount and quality of the business must be such that it will profitably employ at least two men the year around. Under most types of farming, it is difficult to organize the business to give an even two-man distribution of labor thruout the year. Usually help during the summer if the farm is to profitably employ two men for the balance of the year.

The question often asked is how can one tell whether a particular business is large enough to profitably employ two men. Off hand, it would seem that a farmer could easily answer this question for the home farm, but such is not always the case. Many farms provide enough work to keep two men busy, but the labor efficiency and production are so low that the men might find it difficult to make a living for their families.

One of the better measures of the size of business is the number of productive man work units on the farm. It is similar to the war units (15 productive man work units equal one war unit) used by selective service to determine the justification for draft deferment of farm boys. The productive man work unit is the amount of work one man will accomplish, working at average efficiency, in a 10-hour day. (Information for computing man work units on crops and livestock may be obtained from the Farm Management Department of your college of agriculture.) A farm should provide from 275–350 units per man. The "number of men" can be computed by adding the months of labor used on the farm including father, son, other family labor and hired labor and dividing this sum by 12. (If the "war unit" is used as a basis for measuring size, one should attempt to have from 18–23 war units per man.)

Partnership Operating Agreement

General principles. The general principle employed in setting up the partnership operating agreement is that each partner is paid for his contribution of labor and capital and all expenses are shared 50-50. The balance of the income, after paying for the contributions of labor and capital and the expenses, is shared 50-50. With this type of agreement an equitable distribution of earnings is maintained regardless of whether both partners work on the farm for the entire year and regardless of the contribution of capital by the partners.

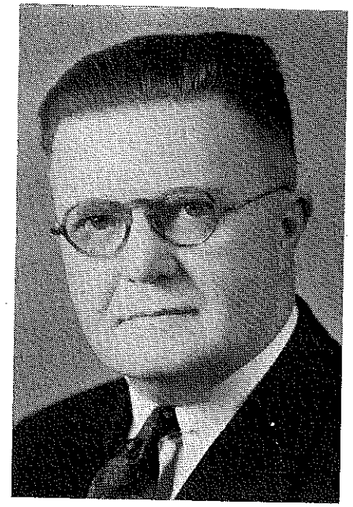
Ownership of real estate. Under this type of partnership the real estate may be owned by either partner or both as long as values are agreed upon by the partners for the purpose of the annual settlement. Regardless of ownership all expenses for maintenance, taxes and insurance are shared 50-50. If any new buildings are constructed or major improvements are made, these should be at the expense of the owner and the value of the real estate should be adjusted accordingly. Should any contribution of money and labor be made by either partner in new improvements on the real estate owned by the other partner, such contributions should be recorded as a lien on that real estate to be paid in case of the settlement of the estate or a dissolution of the partnership.

Often there is a mortgage against the father's farm when the partnership is started which might be difficult for the father to liquidate from his share of the income. In many cases it is desirable for the son to build up an equity in the real estate by helping to liquidate such an obligation. When the estate is eventually settled the son who built up an equity in this manner is just that much nearer his goal of ownership.

Our Leadership in Agricultural Education

THIS article opens a series of presentations of some of our leaders in agricultural education whom many of our readers, particularly teachers of vocational agriculture, seldom see or read. It is hoped that these presentations may serve to develop a better family acquaintance with, and even increase interest in, the magazine.

It is most appropriate that the first presentation should be our Chief of the Agricultural Education Service, Dr. William T. Spanton. Doctor Spanton spent his boyhood on a farm near Middletown, north of Cincinnati. After graduating from high school he entered the Ohio State University from which he was graduated in 1915 and in 1916. His first employment in the field of agricultural education was that of state supervisor in Rhode Island. This brought him deserved promotion to the supervisorship in Missouri where he served until 1925 when he was called to Washington as special agent for the Pacific Region. Upon the retirement of Dr. J. A. Linke in 1941, Doctor Spanton was made Chief of the Agricultural Education Service. Deliberate and considerate in his judgments, Doctor Spanton has been popular with his colleagues in all his public services. He is a student of his duties, sincerely desirous of promoting the strongest possible program of vocational education in agriculture. His friends in The Buckeye State say, "Good work, Bill" and from elsewhere, "Congratulations, Doctor Spanton, on a large job capably administered."



Dr. William T. Spanton

Dr. Charles Homer Lane

1877-1944

DR. Charles Homer Lane, Federal Agent, Agricultural Education, U. S. Office of Education, died Sunday June 25 in the Rhode Island Hospital, Providence, R. I. His death followed a heart attack which occurred during a visit to one of the vocational departments of that state.

Dr. C. H. Lane

Vocational agriculture has become firmly established as an agency of service to farm people thru the vision of many able leaders and the untiring efforts of thousands of teachers. Foremost among leaders in agricultural education has been the name of Dr. Charles Homer Lane. He pioneered in the field previous to the establishment of the federally aided program. He exercised a prominent position of leadership in the development of vocational agriculture under provisions of the national vocational acts.

During his years of service the program in vocational agriculture has grown from 600 departments to approximately 9,000. Under his direction as chief of the service, the Future Farmers of America became established in 1928. He served as the national adviser to the organization of farm boys studying vocational agriculture from its inception until 1934, and since 1934 as a regional adviser to the Future Farmers of America.

Dr. Lane was born in Boston, Mass., July 17, 1877. He received his A.B. degree from Mt. Allison University, Sackville, N. B., Canada, 1903; A. M. degree 1902; B. S. A. from the University of Tennessee 1909; and Ph.D. from Research University 1920. For two years previous to 1906 he was a member of the faculty of Washington College in Tennessee, and from 1906-10 served on the staff of the University of Tennessee. During 1910-11 he was editor of the Southern Farm Advocate.

Dr. Lane has been employed by the U. S. Government for the past 33 years. From 1911-17 he was in charge of agricultural education for the Office of Experiment Stations, U. S. Department of Agriculture; he was regional agent for agricultural education, Federal Board for Vocational Education, Southern States, 1917-20; chief, Agricultural Education Service 1920–34; and federal agent for the North Atlantic States since 1934. He was a member of Phi Kappa Phi, Alpha Zeta, the Cosmos Club, as well as several fraternal organizations. He was a member of the American Association for the Advancement of Agricultural Teaching, the American Vocational Association, and the National Education Association. He was the author of numerous books, bulletins, and articles in the field of agricultural education.

Surviving him are his wife, Mrs. Ida West Lane; three daughters, Mrs. Marian E. Nixon, Washington, D. C., Mrs. Dorothy T. Friedenwald, Baltimore, Md., Wave Ensign Marjorie W. Lane, New York, and son Lieut. (jg) John E. Lane in service on a Navy minesweeper assigned to the New York area.

Methods of Teaching

G. P. DEYOE

Teaching Students How to Organize Farm Work to Save Time and Effort

LOWELL S. HARDIN, Work Project Director, Purdue University, Lafayette, Indiana

Lowell S. Hardin

FARMERS do not have to work so hard. Farmers, and especially sons of farmers, can be taught how to study farm jobs so that more effective ways of using their own, family, and hired labor can be worked out. Current studies of how to perform important farm jobs with a minimum of time and effort indicate that custom and habit play a strong part in agriculture's work methods. These same studies, called farm work simplification or job analysis studies, also show that much can be done to improve traditional but oftentimes wasteful farm work methods.

Work simplification is the term applied to the analysis and study of the way jobs are done (and could be done) from the standpoint of the time and toil required. Its goal is the performance of farm operations according to established scientific principles of production, organization, and management with the least possible expenditure of time, effort, and cost. Thus farm job analysis offers opportunities for research and teaching in an area which is relatively undeveloped.

Studies Point the Way

Thirty years of farm management studies have pointed out the essential part that labor efficiency plays in successful farm operation. These studies have attributed differences in labor efficiency to such managerial and organization factors as size of business, combination of enterprises, distribution of labor, and amount and kind of equipment and machinery. The importance of these factors must not be overlooked. Nevertheless, groups of farms essentially alike in the above factors differ widely in the amount of labor required per animal, per acre, or per unit of production. Dairymen with similar sizes and types of businesses and similar equipment have been found to vary in their use of labor from 85 to 150 hours per cow per year. Much of this difference can be explained in terms of farm operation—how the work is planned and performed from day to day and week to week. Of all the possible ways of doing a job there is one best way, both technically and from the point of view of doing it with the least labor. Farm management studies have done little to define this "best way."

It is recognized that most farm work ment and work method on one farm might be inefficient on another. Experienced job analysts can work out recommended methods for doing often-repeated jobs that are much the same from farm to farm. But to improve the way that most jobs are performed on the farm, the farmer will need to be given the principles of simplifying a job so that he can become his own job analyst.

Job Analysis First

If the farmer is willing to take a job apart and figure out the steps thru which he goes in performing it, there is a good chance that opportunities for improvement will appear. Of course, he must be willing to make desirable changes. No job is too small for study. Reductions in time and effort usually do not come in wholesale lots. Savings, for the most part, are accumulative; large totals result from small gains here and there.

The first guide to simplifying a job is to break it down into its parts. Outline the steps or parts in the job or process as it is now performed. The job of picking apples, for example, might be broken into the following steps: (a) get and place ladder, (b) go up ladder, (c) pick bag of apples, (d) descend ladder, (e) take apples to box, (f) empty apples into box, (g) level boxes, and (h) return to ladder. It may also be desirable to outline the steps or operations performed in any part of the job.

Analytical Thinking

The second important guide to simplifying a job is to apply a questioning attitude to all of the parts of the job. Such questions as the following should be applied to each step in the process to see if the job can be made easier. (1) Does the job have to be done? Can the job or part of it be left out? What would happen if you didn't do it? (2) Can an easier or substitute way be used? (3) Can two or more jobs or parts of jobs be done at the same time? Can the task be arranged so that one man can do the work of two? (4) Will changing the order of the work make it easier? Can the sequence of the steps in the operation be made more logical? (5) Is there a better tool or piece of equipment? Can loads be put on wheels, or gravity be made to help? (6) Can you save walking, carrying, or hauling by (a) planning, or (b) changing places where tools, feed, equipment, and animals are stored or kept? (7) Can the job be arranged so that both hands work? Can you sit, not stand or stoop, or otherwise make the work or work place more comfortable?

principles of work simplification. These principles of elimination, combination, substitution, use of efficient motions, etc. can be applied to any job whether it be in crop or animal production.

Application of such principles or questions to the job of picking apples revealed the following possibilities for improvement. The step of leveling the boxes could be eliminated. There was one easiest way to carry the ladder and to set it in the tree. Proper placement of the ladder and picking fruit in an orderly fashion eliminated additional settings. The picking bucket (equipment) was inadequate as it held only three-fourths to five-eighths of a box of fruit. Thus the need for a new picking bucket of lighter weight, full-box capacity, and more comfortable harness became apparent. Possibilities of other improvements, especially for using both hands more fully, were suggested by taking the job apart and systematically questioning each operation.

It Brings Results

Breaking jobs down into their parts and applying this questioning approach has netted significant increases in the amount of work accomplished by individual farm workers. One of the most striking examples of savings resulting from job analysis is the case of the Vermont dairyman who saved the equivalent of sixty 10-hour days of work and more than 700 miles of walking a year by analyzing his dairy farm chores.[1] This farmer, already well above average in efficiency, had the assistance of a trained research worker who helped study the chores and make improvements in barn layout, storage places, work routines, chore routes, and small equipment.

An over-all study of tobacco production and harvesting indicates that an increase of 25 to 50 percent in accomplishment per person is possible if the best methods found and developed in the analysis of planting, harvesting, stripping, and storing work are used.[2] Similar increases in output have resulted from studies of celery harvesting. Real opportunities for savings in time and effort have been found in the work on general farm enterprises such as the production of beef, pork, poultry, eggs, and hay.

As indicated before, detailed studies can set forth the best way to do certain repetitive jobs. These recommended methods may be new or may be a synthesis of the best parts of existing methods. Thus, in a sense, specifications and instructions can be worked out for individual agricultural jobs. This is being done for such tasks as apple, citrus, bean, and tomato picking. Simple rules for picking tomatoes effectively, for example, were worked out following field studies

[1] Carter, R. M., *Labor Saving Through Farm Job Analysis*, Vermont Experiment Station Bulletin 503, June 1945.

[2] *Work Simplification News Letter* No. 6, January, 1944.

Subject Matter Problem

A. J. PAULUS, Teacher Education, University of Tennessee

A. J. Paulus

FARMING is a vocation which combines skills and management to a high degree. Vocational agriculture, which is a preparation for farm operatorship, therefore provides a program in which the learner makes decisions and develops the skills which his decisions indicate. The two go hand-in-hand because "whenever action is involved a decision is required." As the learner builds up a background of information and understanding, the skills become more meaningful and the decisions more dependable. It is the teacher's job to stimulate and guide the learners in their attack upon ideas, skills, and decisions which are new to them. In this attack the personality of the teacher can stimulate and guide, but subject matter must provide the real ammunition.

The Teacher's Plight

Most teachers of vocational agriculture grew up on farms and, from early experiences there, retain an appreciation of the practical nature of farm problems. They also have studied the agricultural sciences as a prerequisite to certification for teaching. They, therefore, can appreciate the realness of many of the farmers' problems in their area and are aware of a constantly increasing amount of information on these same problems. In short, they are aware of the problems and of the existence of information for solving them, yet are forced to limit their actual help because the needed results of experiments are not readily available to them and many other obligations make demands upon their time. As a result many attempts are being made to provide teachers with subject matter which will meet their needs and limitations of time. Such helps have been beneficial as long as the materials provided showed a definite relation to the local problems as seen by the local teachers. Usually such helps have been organized within a state. The results show a wide variation in subjects attempted and in the cycle of service. It would be valuable to vocational agriculture for some worker to bring this information together to guide future services of this nature.

Preparing Tables and Charts

Tables and charts giving the reports of experiments or showing the findings of surveys vary widely in format and completeness so that one feels the need of some standard for preparing and judging them. Since the weaknesses of a chart are most discouraging to the user, a critical guide prepared by users should be of value. This was done by a group of college seniors in agricultural education while doing their practice teaching with adult farmers. At the time, they were search of information directly related to the problems on which they were offering instruction. They were agreed that a chart should be able to tell its own story or plainly indicate where the rest of the information could be found, whether observed today, tomorrow, or next year. The following are their criteria:

1. Pointedness—Does it bear directly on the problem involved?
   a. Limitation—Is it limited to the objectives set up?
   b. Definiteness—Are the data sufficiently clear to be convincing?
   c. Representativeness—Are the data in line with local conditions?
2. Legibility—Can it be easily read?
   a. Spacing—Are the words, letters, and columns properly spaced?
   b. Lettering—It is correct, consistent, and uniform?
   c. Paper and ink—Do they admit easy reading?
3. Arrangement—Are the items well arranged on the background?
   a. Border—Is there a proper amount?
   b. Sequence—Are the items arranged in their most effective order?
   c. Unity—Do all parts fit together?
4. Completeness—Are all essentials present?
   a. Title—Does it clearly indicate the content?
   b. Symbols—Are all signs, such as $, lb. or bu., in place and in order?
   c. Source—Can each source be traced from the reference given?
   d. Conditions—Does it include th conditions under which the data were obtained?

Before laying a chart aside as complete, it should be judged by these criteria.

Forms of Subject Matter Used

The three common forms of subject matter used by teachers of vocational agriculture may be grouped as (1) general information, (2) directions for operative skills and (3) experimental evidence. Of these three, the first form occurs in greatest abundance and is much the easiest to locate. While general information is basic in developing a concept, its limitations become apparent when the teacher attempts to use it in teaching a skill, or when he needs specific facts to help his group reach decisions. The second form, directions for operative skills, provides definite instructions on the techniques from the first move to the last stroke on the finished product. Successful farming includes many abilities of this nature. The third form, experimental evidence, is a record of the experiences of others in doing a farm operation in the different ways available to a farmer. Since records are a part of all planned experiments, the facts thus obtained provide the most convincing form of evidence to one who is about to make a decision.

Using Local Experiences

On most of the operations undertaken by farmers in a community, many local experiences are available. However, before these local experiences can serve as teaching material they must be identified, assembled, and analyzed. Ordinary observations seldom provide a correct picture of what such an analysis will show. families to gather information on the family food supply. His summary includes the following table on the size of the garden and truck patch.

Garden Size As Reported by Families of Different Sizes

Acres in Garden and Truck Patch	Number of Families Reporting by Family Size Groups			
	Less than 5	5	More than 5	Total
None	10	1	7	18
Less than ¼ acre	0	0	0	0
¼ to ½ acre	3	3	1	7
½ to 1 acre	7	11	11	29
More than 1 acre	14	2	25	41
Total	34	17	44	95

It is doubtful whether any one of the 18 families knew that 17 others were also without a garden. The fact that 44 of the 95 or nearly half of the families had more than five members is an item of considerable value to the teacher who may or may not have known it in advance.

Sorting the Mail

The teacher of vocational agriculture has the continuous problem of deciding what to do with the diversity of materials which comes to his desk. He must constantly be on his guard to separate propaganda from usable facts. This flow of materials is frequently faster than the teacher can handle. As a result he lays articles aside presumably for later study, but instead he covers them up with the next day's mail, and, sooner or later, such materials find their way into the wastepaper basket. The first step in making use of available resources is for the teacher to initiate a plan by which he will select, or at least check or list, the usable information on his first contact with it. If he has his work outlined by enterprises, jobs, and problems, he can easily provide for recording such information. This is a form of lesson planning which few teachers can hope to reduce to memory. After the teacher has outlined his teaching content and left space for entering additional materials whenever and wherever he finds them, he will want to take steps to influence the kinds and amounts of materials received. If he keeps his name on the mailing list of the state agricultural experiment station, agricultural extension service, and some textbook publishers, and subscribes to his professional magazines, regional agricultural papers, and the local newspaper, he will have most of the announcements of new publications. Once he has arranged a place for entering or listing new subject matter where he will have it when he needs it without fail, he will gradually develop an eye for notices of new publications which he may want to request and add to his library.

Getting Along With Single Copies

There is need for a teacher to learn to get along with single copies of many publications and yet to use them effectively in his teaching. He can do so by using individual reading reference lists and by charting or duplicating the key tables and drawings unless prevented by copyright. Such a procedure will keep a teacher continually aware of his over-all plan and with many of the details. The paper shortage necessitates

Farming Programs

C. L. ANGERER

Determining Educational Needs of Students Thru Analyses of Project Records

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HOW many of us as teachers have had our pupils say, "We've had that before!" I was a beginning teacher when I first heard these words. I heard them often that first year. It seemed that my predecessor had left nothing for me to teach. If I had never heard it in other situations, I would have assumed that the fault was entirely mine. But teachers have related the same experience to me so that I have concluded that it is a more or less common experience of both beginning and experienced teachers. Teachers who use the cross-sectional method of organization or teach enterprises seasonally may encounter this difficulty more often than the teacher who "completes" an enterprise as one large, continuous unit or one who follows a text.

Identification of Specific Needs Motivates Study

If from a student's point of view it seems that the subject matter is just merely repeated, the teacher must plan approaches to the materials to be studied which interest and challenge the students. Analysis of records kept for productive projects to find problems which are new to the student or problems which need additional study is presented here as a teaching device to help the students realize their own needs for further study. Thus, a feeling of need is developed to displace the attitude which results from mere repetition of subject matter.

The ability to analyze his projects to determine weaknesses should be developed in every boy. Teachers, in general, have not used the project results in class instruction as much as one would naturally expect. The technique described here is one that every teacher could use to capitalize on the many educational values that projects have in teaching vocational agricultural students.

If one needs further reason for using the technique, it can be pointed out that data accumulated from projects will supplement limited library facilities by providing source materials that fit the local conditions more adequately than much from experiment stations.

Production Goals May Be Used to Discover Pupil Weaknesses

The value of setting goals of productive efficiency for productive projects has been re-emphasized recently[1]. Such goals serve to motivate the student to have more concern for the results obtained in his projects and these goals also furnish a basis for evaluation which students can easily use. Results obtained in projects are not only measures of efficiency in production but also indicators of student ability or lack of ability. If goals are set up for projects and segments of projects, a more thoro diagnosis may be made to determine where improvement is possible. These weaknesses should then become the basis for selection of problems or jobs to develop further abilities which the results indicate are not well developed. Students will be motivated to study more thoroly the problems in these areas because they can see that they have not secured as high a performance as they wish or will wish if the project is continued for another production cycle and higher goals set.

Two cases are cited here to show how projects may be analyzed and studied to realize *more fully* the values that projects offer for teaching vocational agricultural students. Results shown here are compared with certain production standards because the students' goals were not known. This technique may also be used to evaluate the results of projects in comparison with production standards when goals of productive efficiency are set up at the beginning of the project.

Analysis of Pig Weights Suggests Problems for Study

Four students in one high school secured litter weights when the pigs were 56 days old and when the litters were marketed. These data are shown in Table I.

In its present form the data reveal that two litters were small. (Since the feed consumed by the sow from breeding to weaning should be charged to the litter it will be found that the pounds of feed consumed by small litters up to weaning time is high per pig.) It requires more data than we have here, but there are several possible explanations for the small number of pigs raised per sow. Some are listed here to show the possible leads which should be followed in attempting to determine the cause of the results as shown. They are:

1. Few eggs were fertilized when sow was bred.
2. Few pigs were saved at farrowing time.
3. Few pigs were saved up to weaning even tho farrowed alive.

With some such analysis, each boy will determine which ones apply to his situation. The boys will appreciate more than ever the importance of raising large litters if they recognize the high cost of pigs in small litters. They will be interested in analyzing and using all practices which may help to increase the number of pigs raised per sow.

All boys listed in Table I did an excellent job of growing the pigs, *up to weaning time*. The average weight of 45.6 pounds per pig at 56 days of age is very creditable. Even the lowest average weight per pig of 37 pounds of the second litter represents a good performance. On the basis of a one-year sampling all boys have performed creditably.

When one considers the market weight, he observes that the average weights of the pigs of second, third, and fourth litters were or would be 200 pounds or over at six months. If one uses 200 pounds at six months as a standard by which to measure the results of the projects, three boys would have reason to feel that they were good hog producers. Obviously, the first boy required an additional 15 days to feed his litter to a weight slightly over 200 pounds per pig.

When viewed from another angle, the results obtained during the period from weaning to marketing are not so good. In Table II taken from Iowa Experiment Station Research Bulletin No. 118, "A New Feeding Method and Standards for Fattening Young Swine," p. 274, standards have been set up by which one can evaluate the result obtained in these projects.

By comparison with these standards, the first, third, and fourth litters had superior weights per pig at weaning time; but at *time of marketing* only the third litter had superior weights per pig. This indicates a weak spot for Bill and Robert in their projects. On the basis of weight per pig, the pig weights in the second litter could be classed as "good" at weaning and "good" at marketing. The job of feeding pigs from weaning to marketing should surely receive more study by the members of the class.

TABLE I

The Number of Pigs Per Litter, the Weights of Litters and Average Weight of Pigs at 56 Days of Age and at Marketing, and Age at Marketing of Four Litters Owned by Students of Vocational Agriculture

Name of Boy	Pigs Raised Per Litter	Litter Wt. (56 Days)	Ave. Wt. Per Pig (56 Days)	Litter Wt. (Market)	Ave. Wt. Per Pig (Market)	Age at Market (Days)
Robert	10	479	47.9	2,040	204	195
Bernard	11	407	37.0	2,387	217	190
Donald	5	285	57.0	980	196	157
Bill	4	196	49.0	920	230	195

Analysis of Crop Yields by Practices Indicate Ones Poorly Done

In another school, 14 students in vocational agriculture had potato projects in their farming programs. The only op-

TABLE II

Weights for Ages—Per Pig Basis

Age in Days	Good Weights Pounds	Superior Weights Pounds
Birth	2.2	2.5
60	40	50
90	70	85
120	110	125
150	150	180
180	200	240
210	245	295
240	285	350
270	320	400
300	350	...
330	380	...
360	405	...

the crop was harvested. The yields are quite variable and on an average very low. Some of the differences in yields may be attributed to differences in the fertility of the soil. In comparison with the average yield of 58 bushels for the county, taken from the Michigan Crop Report for November, 1942, the average yield obtained by the boys is not significantly higher or lower than the average for the county.

When these students summarized the records for their projects, the teacher directed their attention to some of the practices that were used that might account for the yields obtained. Late potatoes were subject to severe blight infection in Michigan in 1942. The yield was estimated as being cut 15 percent in September for the state as a whole.

Altho the data probably are not sufficiently accurate to analyze to determine the effects of each practice on the yield obtained, here again we have indications that the practices used in the projects did influence the results. An analysis of the data may point to a need for the adoption of practices or for refinement in techniques used in carrying out other practices.

Table IV shows how yields of potatoes can be tabluated to make more detailed comparisons than can be readily observed in Table III. Other comparisons may be made, such as yields of potatoes by number of sprays, yields of potatoes by date of planting, and yields of potatoes by number of cultivations before plantings. If the reader were to do this, several pronounced tendencies could be observed as in Table IV. These comparisons, altho not tabulated separately here, show that higher yields were obtained from earlier plantings and fertilized plots. The evidence pertaining to the value of the number of sprays and of the number of cultivations prior to planting is not as clear cut. The multiplicity of factors which contribute to results obtained makes any generalizations unreliable, yet these analyses have focused the students' attention on certain practices which should be used or may need improving in the management of future potato projects.

In conclusion, may I point out that goals and standards may be used to evaluate the results obtained and thus determine the levels of student ability. Not only does this rather careful analysis provide a new approach to the study of production problems, but it may point to a need for further study of problems in areas of poor achievement. This study would be motivated by a knowledge of unsatisfactory achievement and possibly poor ability. Such study is not only interesting to the student, but it is easy for the teacher to justify. It expresses the need for broad supervised farming programs which include a varicty of productive projects carried for more than one year. It may even suggest to the student a *new* use for his records.

1. Deyoe, George P., "The Place of Goals and Standards of Production in Developing Programs of Supervised Farming," *Agricultural Education Magazine*, Vol. 15, No. 10, April 1943, pp. 188–189.

TABLE III

Yields of Potatoes and Practices Used That Produced Those Results by Students in a Department of Agriculture

	Yield Per Acre in Bushels	Practices Used				
		Fertilizer Used	Number of Sprays or Dusts	Seed Source	Date of Planting	Cultivation Before Planting
A	32	None	0	Home grown	July 3	0
B	16	None	0	" "	July	2
C	144	Manure	1	" "	May 5	0
D	144	Manure	3	" "	June 5	2
E	96	C.C.F.	0	" "	May 2	1
F	40	None	2	" "	June 28	1
G	80	Manure & C.C.F.	2	" "	July 1	0
H	60	Manure	2	" "	July 15	2
I	33	None	0	" "	July 16	2
J	61	C.C.F.	2	" "	June 7	0
K	100	None	0	" "	June 12	1
L	43	C.C.F.	2	" "	June 15	1
M	107	None	2	" "	May 20	1
N	70	None	1	" "	June 10	1

Average 59¾ (weighted average yield for all projects)

TABLE IV

Yields of Potatoes in Bushels by Kind of Fertilizer Used

None	Complete Commercial Fertilizer	Barnyard Manure	Manure and C.C.F.
32 bu.	96 bu.	144 bu.	80 bu.
16	61	144	.....
40	43	60	.....
33	.....	.....	.....
100	.....	.....	.....
107			

Subject Matter

(Continued from page 47)

have been available to each teacher. The limited filing space in most departmental libraries furthers this economy. The value of local data in guiding the teaching of skills and in providing actual information for making sound decisions is re-emphasized, but let us not forget that such information does not become highly prized teaching material until it has been carefully assembled, systematically analyzed and arranged in a form suitable to a teaching situation.

Suggestions for a United Subject Matter Service

United efforts in assembling subject matter materials have long been the fond wish of leaders in agricultural education. The short history of vocational education in agriculture shows many attempts in this direction and almost as many failures. The need for such a service is widely accepted, but we still lack an equal acceptance of a plan for carrying it out. The following suggestions are directed towards the development of a usable plan:

1. Those who have the responsibility of preparing subject matter materials which will be used by the local teacher must be guided by an intimate acquaintance with the local teacher's problems, plans, and interests.
2. Such workers must utilize sources of materials not readily available to the teachers.
3. The materials assembled must deal with problems which the teachers have already recognized or, if called to their attention, will accept as a vital part of their program.
4. Such compilations must give special emphasis to quantitative data from experimental evidence which is representative of local conditions.
5. The teacher must always be considered as a final judge and so must select the tables, parts of tables, or any other part of the assembled materials in accordance with his local problems and his teaching plans.
6. A systematic "clearing house" should be provided capably staffed so that a maximum of the material useful in each state shall reach that state promptly and

WATSON ARMSTRONG

Farmer Classes

W. H. MARTIN

Planning Postwar Instruction for Young and Adult Farmers

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IT IS not too early for teachers of vocational agriculture to begin thinking about and planning for the different kinds of agricultural enterprises in which young and adult farmers will be interested and will quite naturally desire instruction after hostilities cease.

Russell B. Dickerson

Increased Demand for Farm Products

In the first place the present increased demand for many farm commodities will be accentuated for several years after the war in order that the peoples of this nation, as well as those of the liberated countries, may be effectively fed, clothed, and sheltered. These goods will be produced by the farmers of tomorrow—some, the members of our Food Production War Training classes; some, the boys who are now enrolled in our all-day classes; others, ex-service men, many of whom will provide our greatest challenge. Why? Because they will have been around the world and they will know reasonably well what they want to do. More of them may want to live in rural America than have ever before been able to find opportunity there. Many will be returning to the farms because they will want to farm above everything else. They will know from their military experiences the value of education. They will quite naturally look to the teacher of vocational agriculture for guidance and instruction. Will we be ready?

A New Society With New Interests

In the second place, we are headed toward a kind of society, both rural and urban, different than has ever been known—a society with new outlooks, higher ideals, and changed attitudes. Because of the war, with its numerous demands upon every man, woman, and child to do their utmost to hasten victory, folks everywhere have become conscious of a great many things previously dormant.

The Value of Education for Adults

Education, for example, has become more meaningful to scores of American people. Men and women—both young and adult, in the services, in industry, as well as in civilian routine—have availed themselves of many different kinds of opportunities to increase their knowledge, habits, and skills to prepare richer living. Adult education is here to stay. Our young and adult farmers are expressing a desire to continue their education.

The Importance of Nutritious Food

Food, good food, is another example for it is being proven both in markets and in homes everywhere that Americans are eating more and higher quality food than ever before. Why? They have had more money to spend for it and they have made it a point to buy only the best, realizing full well that a balanced diet is the best insurance against illness and consequent loss of time.

Mr. Roy F. Hendrickson, Head, Food Distribution Administration, recently said, in part, that in 1941–42 Americans ate 10 percent more meat, drank 25 percent more milk and used 30 percent more canned fruits and juices than in 1935–39. For practically every food except cereals, new records were established.

High income and full employment since Pearl Harbor have quite naturally been responsibile for increased consumption and new levels of human nutrition. As long as the former factors obtain the latter two will also, but the increased consumption of more nutritious foods may be expected to remain on a higher plane than ever because consumers everywhere are fully aware of the value of highly nutritious food as a safeguard to health, happiness, and well-being.

During the war and for several years afterward, farmers will enjoy larger demands and improved markets for their produce. Food is used for offensive warwork. Food gets shipping priority. Food will underwrite the peace. To continue to produce the enormous quantities of food, our American farmers will be eager to utilize the results of scientific research which lead not only to more efficient production but to a greater diversity of farm commodities to supply increased demands. Systematic instruction will be essential.

Improved Livestock Production

There will be greater need for improved livestock and poultry as efficient producers of milk, eggs, meat, and registered animals. The liberated countries will look to America for foundation animals to rebuild their livestock industries. Doubtless artificial insemination in livestock breeding will receive considerable impetus in this connection. Will we be ready to lend intelligent support to this relatively new program that promises big dividends to the livestock industry? Will we be in a position to encourage and to instruct the members of our young and adult farmer classes in the production of high quality livestock and livestock products?

Improved Crop Production

Not only will there be increased acreages of certain crops, but there will be a greater variety of crops to be grown on American farms—hybrid corn, new grasses, new legumes, new and improved varieties of grain crops, and new crops for industrial purposes. The production of seed of many new crops is a very promising farm enterprise for the future. We should be ready to give instruction in it.

Increased interest and effort will be manifested in the field of crop improvement largely thru co-operative crop-improvement associations. Their primary purpose will be crop improvement thru production and distribution of better seed of superior varieties; crop testing with respect to soil, climatic, and market adaptations; the building up of an adequate supply of superior seed for sale and ultimately for more general use in a total crop improvement program.

The crop improvement program will be accompanied by improved tillage, improved management, improved fertilizers as well as by new concepts of their uses, and with improved utilization of all crops and their products in human nutrition and livestock feeding and in industry. Crop production in the postwar period will become a planned program directed toward specialization rather than incidental growing of the several crops. It is a challenging program to be ready to help develop.

Improved Farm Machinery and Equipment

The field of labor-saving machinery and equipment on the farm offers unlimited possibilities for the instruction of young and adult farmers. New farm machinery will need to be selected, purchased, understood, operated, maintained, and repaired.

The construction of such equipment as portable elevators and the conversion of automobile chassis into trucks, trailers, and wagons will have a place in the farm-shop programs of the future for young and adult farmers. We have learned from our experience with our OSYA classes that farm machinery repair has come into its rightful place as a major phase of vocational instruction for young and adult farmers.

Farm shops in the future will of necessity be designed and equipped to provide a greatly expanded program of instruction in farm-shop work, including maintenance, operation, construction, repair and adjustment of all types of farm machinery and equipment. In order to be ready to meet this challenge, teachers of agriculture must be alert and aggressive and make plans for the postwar period.

Quick-Freezing and Dehydration of Foods

The future holds promise of a great

dehydrated food industries. Farm families especially have taken enthusiastically to the plan of the frozen-food locker and more recently to the home freezing cabinet. This means of storing foods in their fresh state provides a great convenience to all families who can raise their own food or buy the best when in season.

Similarly the dehydration of foods, both commercially and with a home dehydration unit, is a vision of the future. Commercial dehydration, almost exclusively an operation for government purposes at present, is expected to remain as an industry after the war. The home dehydration unit is quite new and is developing rapidly for family use. It is likely to occupy a place in the home of the future that will be comparable to the home freezing cabinet of today.

Here again, plant breeders, researchers, farmers, and teachers alike may well be thinking of the adaptability of fruits and vegetables to these new methods of processing. The development of improved varieties of tree, bush, and small fruits for quick-freezing and dehydration will be essential. Sharp-freezing and dehydration are bound to bring about new changes in the agriculture of the future. This fact should be a challenge to all of us to plan for the future so that we will be prepared to assist and instruct young and adult farmers in these new and challenging phases of the family food industry.

New Foods

There will be increased interest in a variety of new foods—soya products from the "miracle bean," dehydrated foods including whole milk, skim milk, whey, eggs, yeast from the brewing industry, young oats for cereal foods, and wheat and corn germs as sources of vitamins. There is a great promise in the enrichment and general improvement of a whole gamut of foods with synthetic vitamins, the production of which has been given a very great expansion under the impetus of war needs.

Farm families will have as much or more interest in these new foods as their "city cousins." Many of those just mentioned are either thrown away or used primarily for livestock feed, but they may easily be recovered for human food with a consequent enrichment of the family diet and a new source of income to the farmer. Will teachers of agriculture be alert to assist farmers and their families in the intelligent utilization of the by-products of the farm as sources of highly nutritious food with an ultimate increase in the farm income?

Marketing and Distribution a Challenge

Pioneering in the marketing and distribution of farm products represents a still greater field of opportunity in the total food industry. Young and adult farmers in the postwar period will need guidance and instruction in this field and teachers of vocational agriculture will need to be prepared to help find solutions to such problems. Already there is much thought being given to the possibilities of fixed and movable plants to serve the farmer directly by handling agricultural products grown near by. These will extract, compress, dehydrate, refrigerate, concentrate, and fabricate. All of this means first-step processing to retain from 50 to 80 percent of several

they should stay, and the farmer will be his own best customer. Such merchandising of farm products, of, by, and for farmers and their families, will offer a real challenge to the teacher of agriculture who is alert to its possibilities in his own rural community.

Expanded Co-Operatives

The probable postwar function and manner of operation of co-operatives will establish the present period as the infancy of the co-operative field. In addition to their improved facilities for co-operative buying and selling, their services will be greatly increased. Farmer membership will be increased and the members will demand that their association provide more services.

Co-operative members will be thinking, for example, of the possibilities of co-operative quick-freezing and dehydration units, operated on the same "owned and controlled by the member" basis as our auction markets are today.

In addition to good livestock, crops and soil, and to good management, efficient farm production demands a wide variety of services which must of necessity be made available to farmers at low cost. The co-operatives are taking the lead both in studying new and improved farm services and in making them available to the farmers. In addition to those services already established, the co-operatives will occupy an important place in livestock improvement thru artificial breeding associations and in crop improvement thru crop improvement associations.

New markets, as well as new uses for what are commonly regarded as waste products of the farm, will become an important research program of the future. Co-operatives along with private industry will rally to the opportunity to render more service to farmer patrons. We shall need to do some sound thinking about these opportunities in order to have our instructional facilities in proper order when the time comes to utilize them fully.

Work Simplification Is Challenging

Work simplification is another example of instructional opportunity in young and adult farmer programs both during and after the war. Let's help our members to take some lessons from industry's managerial efficiency and apply them to the farm. From experience we have learned that work simplification is a great aid to the farmer in more efficient production, harvesting, grading, and storing of field crops; in the production, housing, feeding, and handling of livestock and their products; and in the efficient and effective use of labor and labor-saving devices. For example, the buck rake and the portable elevator for grain and other farm commodities are here to stay. Both of these items, as well as several other labor-saving devices, provide excellent farm shop projects for young and adult farmers.

We are told that, after the war, the prefabrication of buildings will be an important enterprise in the building industry. Prefabricated structures are already in use on many farms and undoubtedly will be in great demand after the war. Their efficient utilization in work simplification will necessitate much farmers—first, as to the size and the layout of the buildings desired, and secondly, as to the location of the buildings when they arrive at the farm.

"Labor Saving Thru Farm Job Analysis" is the title of Bulletin 503, Vermont Agricultural Experiment Station, Burlington, Vermont. Its contents have many implications for more efficient farm production both now and after the war in the numerous jobs on the farm that require so many footsteps on the part of all members of the family. Likewise, it suggests a diversity of instructional opportunity for our farm-shop program for young and adult farmers.

Short, Intensive Units of Instruction

In the planning for postwar instruction for young and adult farmers, we shall be smart if we take some lessons from our experiences in promoting, organizing, conducting, supervising, and following-up the instruction in our OSYA classes. Whether these lessons were learned in the Rural War Production Training program or are yet to be learned in the Food Production War Training program, they will have great value in the furtherance of similar instruction among young and adult farmers in the postwar period.

These programs are streamlined and accelerated to the nth degree. We shall never go back to pre-Pearl Harbor programs of instruction for young and adult farmers for both groups have, thru their manifestation of interest, proven the extremely useful value of short, intensive units of instruction. Farmers have likewise assured us that they they desire instruction in a variety of subjects in a given year and that they will come to class for it not only in season but out out of season, depending almost entirely upon the need and the time available for them to obtain it.

We shall be smart to plan to continue an accelerated instructional program geared to the needs, interests, and desires of the farm folk of the rural community, being ever ready to provide instruction in many short, intensive units.

Instruction for the Farm Family

Instruction for young and adult farmers in the postwar period will be geared to the interests of the entire farm family. We shall have to plan accordingly.

A striking example of the need for this consideration is the place of Course 15, "Production, Conservation, and Processing of Food for Family Use" in the total instructional program. It is a splendid example not only of co-operative learning effort between farmers and their wives but also of the co-operative teaching effort between the teacher of vocational agriculture and the teacher of vocational home economics. This course provides training content which, because of its seasonal nature, may be made available practically all year and year after year. It should be given in short, intensive units, quite largely on a seasonal basis and to both the farmer and his wife. Let's all be ready.

Systematic Follow-Up on Instruction

Finally, systematic follow-up of instruction must become an integral part of the total program of young and adult farmer classes regardless of the number

Farm Mechanics

R. W. CLINE

Looking Ahead in Farm Mechanics

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J. R. Cullison

BEFORE we can plan a program in farm mechanics adequate to meet either our present or postwar needs, we must first agree on our basic objectives. What do we subscribe to as a sound program? Our answers to the following questions will largely determine the nature and scope of our postwar program in farm mechanics:

1. Are present farm mechanics programs adequate to meet the needs of a mechanized agriculture?
2. Shall we continue to offer farm mechanics work to out-of-school groups in the postwar period?
3. Shall we continue to employ special farm-mechanics teachers after the war?
4. Shall we continue to expect teachers of vocational agriculture to teach both shop and production classes?
5. What should constitute our all-day program in farm mechanics?
   a. Should the emphasis be placed on doing major construction and repair jobs or on teaching basic skills?
   b. Should more emphasis be placed on managerial jobs such as selecting farm equipment?
   c. What responsibility should the farm mechanics instructor assume in developing extended shop practice on the farm?
   d. What percentage of the time in vocational agriculture should be devoted to farm mechanics?
6. What is adequate farm shop equipment?
7. How will a modified JIT procedure of teaching affect the nature and scope of our instruction?
8. What teaching aids are needed in farm mechanics and who should develop them?

Meeting Wartime Needs

Most of the mechanical classes in the Food Production War Training Program have been taught by mechanics and repairmen. Only one teacher of vocational agriculture in Arizona has taught these classes. Since these men have little or no professional training in methods of teaching, most of the instruction has been on an individual basis. However, special skills and proficiency in mechanical work have enabled these teachers as a group to make substantial contributions to the services offered by departments of agriculture. Farmers have come to look upon use of these new facilities. We may expect these instructors to become more useful in the school program as we provide adequate training programs and supervision for the improvement of their teaching methods. Will this part of our farm mechanics program be retained in the postwar period or must we scrap it?

Where Do We Go From Here?

At least three plans may be followed if we retain the adult program. First, we may continue our present program in which teachers of vocational agriculture teach high-school students only, leaving out-of-school groups to special teachers who are masters in their respective trades. These classes may be conducted as night classes in the school shop or possibly in community centers where the building and equipment are co-operatively owned. The instructor may be a commercial operator who is hired by the school on a part-time basis thruout the year to help farmers perform their own construction and repair jobs.

Another possibility is to employ two instructors in each department of vocational agriculture. One will teach production courses only while the other will teach the farm mechanics work, including both all-day students and adult farmer groups.

A third choice is to revert to our prewar plan in which the regular instructor assumes full responsibility for all instruction of both groups.

In charting our course for the future, we should use the findings from studies on the efficiency of present programs. Such a study recently completed in Arizona indicates a number of improvements must be made in the shop program if it is to adequately meet the needs of farmers and prospective farmers in a highly mechanized agriculture. Among the significant findings, which are probably typical of the situation in many states, is the lack of skill and understanding of basic mechanical operations on the part of students from departments of vocational agriculture.

Teacher Preparation

Altho the present situation cannot be traced to any one factor, the training and experience of the teacher is an important one. Teachers in this state have received an average of 8.5 college credits and spend about 40 percent of their time giving instruction in farm mechanics. While there is no convenient unit for measuring practical experience, it is rather limited in terms of adequate skills required to teach the jobs needed by students, especially adults. Any plan, therefore, for improving and expanding more nearly adequate, especially at the doing level.

Course of Study

Another problem of major importance is the training activities for all-day students. It appears that we should revise our offerings in farm mechanics in order to place more emphasis on basic skills and abilities thru *systematic teaching* and less emphasis on excessive repair and construction work to a point where learning is only incidental.

Even tho it is desirable to complete as many useful projects as possible, our main objective should be to develop satisfactory standards of workmanship. Since the student is usually more interested in completing the immediate job at hand than he is in mastering skills and understanding, we must continually strive to maintain a proper balance between the primary objectives of instruction and the more immediate interests of the learner.

The basic skills and related information in farm mechanics are somewhat common to the needs of students in all schools of the state and to some extent in schools thruout the country, but the actual jobs used to develop these abilities will of course vary with each community. A definite course of study for a department will therefore tend to maintain a balanced program of instruction and prevent serious gaps in the abilities developed by the learner.

In contrast to this somewhat rigid course of study for all-day students is the adult farmer program. It is very flexible and centers around the farmer's immediate repair and construction problems. The more alert teachers, however, find many mechanical problems that are common to the interest and experiences of several farmers and use these situations as a basis for systematic group instruction. The out-of-school group has so many immediate problems that they have neither the time nor the inclination to follow thru a systematic course of instruction in farm mechanics for acquiring basic skills except those for which they have immediate need.

It is reasonable to assume that if we do an adequate job of following an organized course of instruction in all-day classes in farm mechanics, we will ultimately have a group of adult farmers who will be qualified to do their repair and construction work with little need for systematic instruction except on their immediate problems.

Methods of Teaching

In recent years considerable emphasis has been given to the training of teachers on the job especially in making more effective use of the demonstration. State and district clinics in Arizona have created a new appreciation for this approach to teaching, but much remains to

Does Your Department Own a Tractor With Machinery Attachments?

Professor Cullison reports that about one-fourth of the departments in Arizona now own tractors with attachments of plows, disks, and planters, and they have access to near-by land on which the students operate the equipment. This combination of equipment and facilities provides ideal instructional situations in tractor care and operation

procedure as set up for the training of farm workers is well adapted to the teaching of any operative job. Obviously, most jobs in farm mechanics are of the operative type.

The JIT procedure may be used either to "teach *a* boy to do *a* job" or to "teach *a* class to do *a* job." In either case the main steps are identical, for in the final analysis the main objective is to "teach *a* boy to do *a* job."

The only variation in the procedure in teaching a class as compared to teaching an individual is that the instructor will tell, show, illustrate, explain and question members of the entire class rather than one individual. The procedure conserves time of both the instructor and the learner. Thru practice the instructor may standardize this technique to a point where it becomes a habit, thus permitting him to devote more of his conscious effort to the mechanical skills being taught.

Teachers who have applied the JIT procedure in teaching farm mechanics are enthusiastic about its possibilities for helping them do a better job of teaching skills in less time, thus allowing more time for supervised shop work.

Efficient instruction implies the systematic use of adequate testing of both content and skills. To this end we have made a beginning in Arizona by developing a set of objective tests covering each unit of work taught in Farm Mechanics I and II. These have been distributed, with an answer key, to each teacher of farm mechanics in the state. Our recent survey indicates that teachers are becoming test conscious, but as yet are not using them to best advantage. There is need for further work in constructing reliable testing instruments for use by states, regions, and the country as a whole. Stabilized courses of study will facilitate this undertaking.

Home Farm Shops Essential

Altho very few farmers have failed because they could not do the simple construction and repair jobs on the farm, nevertheless much saving may be realized by using farm labor to avoid high-priced small factor. Many farmers have lost their farms because they have spent too much time in town.

Home farm shops should be kept rather modest, with farmers and ranchers depending on co-operative ownership of the larger and more expensive equipment. Community centers may serve a need in the economical use of this large equipment.

Home farm shops will doubtless become increasingly important as farms and ranches become electrified and mechanized and as we graduate students who have developed skills and understandings in many types of shop work. Farm mechanics instructors may perform an invaluable service by developing occupational pride and interest in farm boys to have good home farm shops.

More Adequate Equipment

Broader programs in farm mechanics are requiring greatly increased shop facilities to meet instructional needs. Teachers and administrators in agricultural education in the past have been far too modest in their requests for shop facilities. Much equipment has been added to our shops thru the Food Production War Training program which was long overdue.

For example, whereas only two departments in Arizona had gas or electric welding outfits at the outbreak of the war, approximately 75 percent now have one or both. The average increase in inventory value of equipment per department has been $1,400 during the war period. All instructors report adequate equipment for all types of work in the state course of study for Farm Mechanics I and II.

What equipment should the school provide for teaching courses in farm power and machinery? Should the instructor be expected to rustle this equipment from the community when it is needed for instructional purposes? We believe that it is just as reasonable to expect a school to provide a tractor for teaching the operation, care, and repair of tractors as it is to provide a forge for

now have tractors with attachments and access to farm land on which to operate the equipment. Farm mechanics in these departments has become an integral part of the instructional program and teaching-learning situations occur in their natural setting.

Larger Shops Needed

Proposed postwar programs require larger shops than we ever thought necessary before. Departments sponsoring adult programs have found that school administrators and public sentiment will support the construction of larger farm shops. In response to a demonstrated need, one department in Arizona has set a new standard by providing a farm-shop building with 10,500 square feet of floor space that includes a classroom, tool room, paint room, storage room, toilet, washroom and showers, and instructor's office.

Despite this trend our survey indicated that nearly one-half of the shops in our state will accommodate only 12 students or less.

Now is the time for administrators and teachers to develop farm-shop plans and budgets for the postwar building program.

Visual Aids Inadequate

Instructors of vocational agriculture have been handicapped by a dearth of practical plans for farm-shop projects. Many attempts have been made to satisfy this need thru plan books and laboratory manuals. Altho some good has come from these publications, as a group, they have been rather unsatisfactory. The most common criticisms are that information and specifications are inadequate, projects are impractical or specifications do not conform to good basic design.

The committee on subject matter for vocational agriculture in the Pacific region has a program under way for developing and distributing plans and blueprints of practical farm-shop projects. One hundred and six plans have been reproduced and distributed.

Good work is being done at the national level in developing film slides and motion films on several mechanical units. Eventually similar aids should be available for every type of work in farm mechanics.

There has been a lag in the proper use and appreciation of films as teaching devices. One probable cause for their relatively slow acceptance by farm mechanics teachers is due to inadequate projection equipment. Only one-half of the departments in Arizona own or have access to a film strip projector. In order to encourage each department to use these films, our state Department of Vocational Education is providing a film service. Teachers of farm mechanics are requested to order their films on a semester basis. This facilitates booking the films and prevents delay and disappointment in the local departments. Film slides cost so little that each school is expected to purchase its own and rely on the state department for only the more expensive motion films.

Conclusions

1. Our conception of an adequate program in farm mechanics has been

Studies and Investigations

E. B. KNIGHT

Criteria for Evaluating Programs of Preparation for Vocational Agriculture Teachers

A Research Study by Dr. Henry S. Brunner, Pennsylvania State College

Reviewed by L. R. HUMPHERYS, Teacher Education, Utah State Agricultural College

Henry S. Brunner

L. R. Humpherys

HOW efficient is our method of recruiting trainees in vocational agriculture? How well do we train agricultural teachers? What opportunity do we provide for growth of teachers in the service? What constitutes desirable institutional facilities for teacher-education? These and many related questions are given consideration in, "*Criteria for Evaluating Programs of Preparation for Teachers of Vocational Agriculture*," a very significant study recently completed by Dr. Henry S. Brunner of Pennsylvania State College.

This unit of research represents one of the few intensive studies in the field of teacher-education in agriculture. It appears at a time when we are re-evaluating our whole scheme of agricultural education for what might be considered the postwar program. More important, it will serve the purpose of stimulating an evaluation of the fundamental and basic part of the program in vocational education in agriculture; that is, training teachers to lead and direct the program in rural areas of the country.

Plan of National Standards Committee

The National Standards Committee for Vocational Education in Agriculture recognized the urgent need for an evaluation of the three phases of the agricultural education program, viz., (1) evaluation of local programs of vocational education in agriculture, (2) evaluation of teacher-training programs in vocational agriculture, and (3) evaluation of supervision and administration of programs in vocational agriculture. This committee was of the opinion that evaluation of procedures in vocational education in these three fields in agriculture should be a continuous process. However, the efforts put forth by the National Standards Committee in co-operating with the United States Office of Education have been confined to the second phase, evaluation of local programs of vocational education. It is not too much to say that education, like industry, will witness growth only to the extent of its ability to make a critical evaluation of its enterprise and to adjust its organization procedures in the light of such an evaluation. Certainly the problem of teacher-education is the key point in the whole program in vocational agriculture. The formulation of criteria for measuring the effectiveness of teacher-education by Dr. Brunner, therefore, is in line with the needs as analyzed by the National Standards Committee and provides a much needed instrument for measurement in the field of agricultural education. Dr. Brunner's contribution fits admirably into the plan of the standards committee.

The Procedure

The purpose of Dr. Brunner's study was to develop criteria which might be used as an instrument in the evaluation of teacher-education programs. He has assumed that in our present stage of experience and development, effective teacher-education can be defined in terms of generally accepted responsibilities and functions of teacher-training institutions which "in turn can be defined operationally, i.e., in terms of specific factors, conditions and procedures which can be observed and recognized." He has further assumed that "the formulation of criteria for effective teacher-education in agriculture can be carried on co-operatively on a nation-wide basis by a group of recognized authorities in this field."

In approaching the problem, Dr. Brunner made a thoro review of the literature in the field of teacher-training in general and of vocational education. On the basis of this study and his own extended experience, a comprehensive list of *responsibilities and functions of the teacher-education program in agriculture* was formulated, as representing the generally accepted program in the country. These functions and responsibilities of teacher-education are set up in a positive way as *guiding principles* of our accepted philosophy in agricultural education. More specifically, these principles or controls, as they may be called, are designated as "Guiding Statements of Position" in eight major areas of teacher-education.

Tentative Criteria Tested by Jury

The tentative guiding principles formulated by Dr. Brunner together with accompanying measuring devices were submitted for criticism and suggestions to a jury of experts for their final criticism and suggestions. The criteria were then revised in final form as an *instrument for evaluating programs of preparation for teachers of vocational agriculture.*

Jury Technique

As indicated, Dr. Brunner used the *jury technique* in developing the criteria for the evaluation of teacher-education. This technique has been used in much of the research work in education. Binet in formulating his intelligence test resorted to jury procedure to determine what constitutes a *normal* person. Thorndike in working out his handwriting scale used a jury of experts as a means of securing standards of handwriting. Both Hart and Englehardt, separately, used a jury of experts to determine standards for school buildings. The Hillcyas Scale for English Composition is constructed on the same principle. More recently the basic principles of philosophy used as controls in the Co-operative Study of Secondary School Standards were formulated by jury action. It would therefore seem that the jury technique is the most logical and important procedure in initiating standards in a new area. Once we have acquired basic standards and tested them in practice we may use other techniques in future revisions. This dissertation, therefore, represents one of the best examples of jury technique in the field of educational research.

The organization of the evaluation instrument being presented as the outcome of the study is indicated by the following outline:

1. Pre-employment teacher-education
   a. Recruiting trainees
   b. The training curriculum
      1. Resident courses
      2. Participating experiences in teaching and activities related to teaching
2. Placement of teachers
3. "In-service" teacher-education
   a. The professional improvement program
   b. Developing teaching aids
4. Research
5. Administration
   a. Co-ordination with state program of vocational education in agriculture
   b. Relationships within the teacher-training institution
6. The staff
7. Instruction

The instrument is developed in 12 sections and a "Guiding Statement of Position" appears at the beginning of each section. The "Guiding Statements" in the three sections which make up the "Pre-employment Teacher Education" division are:

I-A. In order to provide the state with an adequate supply of superior teachers of vocational agriculture, the teacher-education institution should effectively recruit, select, and counsel the students who are to prepare for the work.

I-B-1. There should be a special curriculum, or approved individual program of study, based upon the needs of teachers of vocational agriculture in the state, and designed to prepare trainees adequately for the technical, economic, social, and cultural responsibilities they will be expected to assume.

I-B-2. The program of teacher-education should provide for participating experiences in teaching which will give the trainees ample opportunity, under competent supervision, to participate, in a functional capacity, in a cross section of the work of a teacher of vocational agriculture in a well-organized school system.

Each of the 12 sections comprises a list of items of "information needed" and a list of "observational guide items." The former call for data and facts which might not be observable but which are essential to equitable evaluation. It is intended that these data should be secured from filed official records and reports of the teacher-education department, and/or secured in conference with members of the departmental or institutional staff. The "observational guide items" consist of statements of provisions, conditions, and characteristics which are believed to have a bearing on the effectiveness of the program for teacher preparation. For example, the first item on the list in the section on "recruiting trainees" is:

1. There is a definite plan for selecting trainees on basis of abilities and achievements.
   a. On high-school record
   b. On college record to date
   c. On farm experience
   d. On leadership abilities and activities
   e. On previous educational and practical experience in case of transfer students with advance standing.

The number of "observational guide items" varies from eight to 20 in the different sections, with provision for additional items required in any particular situation. The quantity and the nature of the "information needed" varies considerably also in the different sections, in each case being as brief as possible without sacrificing satisfactory coverage.

Provision is also made for evaluators to add "commentary evidence" in support of, or as contributing to, their evaluations. The instructions suggest that such "commentary evidence" should be "verbal snapshots" of something significant which was noted—seen or heard—by the evaluators, i.e., reports of the presence or absence of significant conditions in a situation or reports of something that happened under the evaluator's observation. Space is provided for these comments on pages opposite each list of "observational guide items," and provision is made for evaluators to indicate to which particular item their comments are related.

Five point scales for a marking of the various elements are included and explained in the "Instructions." The first of these and the use for which it is proposed represent something of a departure from other instruments of evaluation designed and used previously in evaluating educational programs. It is called the "scale of importance." Using the symbols "V" (vitally important), "I" (important), "M" (moderately important), "L" (of little importance), and "U" (unimportant), the members of the committee of evaluators as well as the members of the staff responsible for the program being evaluated are asked to approach the evaluation by indicating in a space provided before each "guiding statement of position" and each "observational guide item" their judgment as to the importance of each policy, provision, or condition in that particular program. This plan is presented as a means of securing expressions of individual opinions as to the importance of the different principles to the purposes of teacher-education in agriculture. Belief is expressed that a set of markings would represent to a significant degree an individual's own philosophy of the purposes and aims of such education, and that a collection of the opinions so expressed might be accepted as the philosophy of any group of individuals who had marked the statements. This is, of course, a further application of the basic principle which governed the development of these criteria—the thesis that by joint action and conferences a committee of evaluators and members of a teacher-education staff can define objectives for a particular program, and that the elements of an evaluation instrument should be flexible and adaptable to the objectives defined for that program.

The "scale of fulfillment" to be used in marking the "observational guide items" is: "A" (fulfilled to an outstanding degree), "B" (fulfilled to a satisfactory degree), "C" (average fulfillment), "D" (planned, but no satisfactory results), and "E" (unsatisfactory). For marking final "evaluation questions" the scale is: "5" (highly satisfactory), "4" (very good), "3" (average), "2" (poor), and "1" (very poor). To both of these scales the symbol "N" is added, to be used when the question or condition "does not apply," i.e., if it would be considered unnecessary or unwise to have or to supply the provisions called for.

Summary

In summary, Dr. Brunner has set up a basic philosophy of teacher-education in terms of short specific statements which are designated as "*Guiding Principles of Control*". Characteristics of a desirable program are enumerated with provision for weighting. Pertinent data are collected and mental "snap shots" are made by the evaluators in terms of local conditions and an evaluation is presented an "evaluation question" intended to give evaluators an opportunity to summarize their judgment of the effectiveness of the program in the phase of teacher-education treated in that section.

All these elements of the instrument are set up and arranged on the pages so as to show their relationship and so as to present a complete descriptive record when the form is applied to a teacher-education program.

These criteria constitute a new instrument which can be used in a national program of evaluation in the field of agricultural education. This instrument in the hands of a teacher-trainer anxious to inform himself of the effectiveness of his services will do much to point the way for improvement. It is gratifying to know that Dr. Brunner plans to make available to every teacher-training department in vocational education in agriculture in the country, a copy of these criteria. This courtesy on his part should be helpful in developing a consciousness of the need of evaluation as a fundamental part of the program in vocational education in agriculture. Finally, evaluation of typical teacher-education programs in the country should point the way for the formulation of a more comprehensive philosophy and a natural approach to standards.

Farm Mechanics

(Continued from page 53)

broadened as a result of special instructors, generous budgets, and equipment provided thru the Food Production War Training program.

2. A continuous program of instruction in farm mechanics should be made available to adult farmers.

3. Special teachers should continue to teach our farm-shop program for adult farmers and possibly assist with instruction for all-day groups in some schools.

4. It appears that one teacher of agriculture cannot satisfactorily teach both production and farm mechanics courses including the expanding program for adults.

5. A definite course of study should be followed in our all-day programs based on the development of mechanical skills thru systematic teaching.

6. Shops and facilities must be expanded to meet the needs of a highly mechanized agriculture.

7. Systematic teaching by use of the Job Instruction Technique will improve the quality and broaden the scope of our instruction in farm mechanics.

8. Teaching aids in the form of blueprints, plan films, and other visual and real material are urgently needed by teachers of all-day and adult classes. Much of this service may be developed and provided thru state and federal agencies.

Dr. Stimson's Honor Roll

DR. RUFUS W. STIMSON asks that announcement be made to the effect that he intends to resume his drive to complete in 1944 the manuscript for his new book and its honor roll. His friends sympathize with him in the loss of his wife who passed away in May. He expresses confidence that he will be able to complete his task but assures us that if, for any good reason, his ability should fail, then the work will be carried to completion by Dr. F. W. Lathrop, Research Specialist in the Office of Education. Dr. Stimson may rest assured that his many friends will have unlimited patience in awaiting the completion of the manu-

Future Farmers of America

A. W. TENNEY

Interest in the F.F.A. Chapter

C. D. WATSON, Chapter Adviser, Highgate, Vermont

THE Highgate Chapter of F.F.A. was organized in 1941 with a membership of 11 boys. This was about 90 percent of the boys enrolled in vocational agriculture which was introduced in the school at the same time. The present membership of 15 is 100 percent of the agricultural enrollment of which three members are in the armed services. As adviser, this was also my first experience in F.F.A. work altho I had had several years experience in teaching agriculture.

In order to fulfill the definition of the Future Farmers of America as an organization of, by, and for boys studying vocational agriculture in the secondary schools, it is necessary that the members definitely understand that the chapter is *their* organization and *their* responsibility and that the function of the adviser is strictly advisory as far as determining and carrying out policies and activities are concerned. I have attended chapter meetings where the advisor was the only member who made any motions during the entire meeting. This, to me, is a sad situation and I seriously question the value of such a meeting to the members. I follow the practice of never making a motion at a meeting and of participating in the discussion only when requested by a member or when the course of action is detrimental to the chapter. I assist the secretary in preparing the slate of business and leave the execution to the chapter members. It is, of course, sometimes necessary to correct or advise on parliamentary procedure or to instruct an officer in the duties of his office. The active participation should come from the members.

I feel that the success of a chapter depends more on the interest and the pride which the boys have in the organization than on any other factor. They can be taught the methods if they have the interest to learn. I am of the opinion that proper paraphernalia and equipment are big incentives to the necessary interest and pride. For this reason I feel that an attractive gavel for the president is much more effective than one which looks like a wooden mallet. The display of the official emblem and colors in all ways possible develops pride in the organization. Our chapter has purchased official shirts and ties for all members to wear at meetings, as well as official jackets and ties for all officers. All members are encouraged to purchase and wear F.F.A. sweater emblems in addition to their degree pins. Interest in this respect is so high here that the members insisted that the chapter purchase an official shirt and tie for the advisor. Altho I feel somewhat conspicuous wearing it, I make it a practice to do so at all meetings so the boys will feel that my interest in the organization is as great has been well kept by the members and is a worth-while incentive to interest and pride. This is usually one of the first things shown to visitors.

Publicity of chapter activities and accomplishments cannot be stressed too much. We hold a public meeting at the time of the installation of officers and award medals of recognition to the outgoing officers. Parent-and-Son banquets and public initiation of honorary members have also been used effectively and are good publicity devices. Visits by state officials serve to impress the members and the public that the chapter is only a part of a much larger organization which is national in scope. We have also found visits between chapters to be valuable for the ideas obtained.

Activities carried out by the chapter serve to interest the public in the F.F.A. As a result of the work in farm machinery repair and the sale of reconditioned farm machinery which we have carried out during the past two years, we now have a number of farmers coming to us for used parts or repairs when a machine breaks down. We also find that we have no trouble in disposing of articles offered for sale by the chapter. Periodic news articles in the local paper using the official F.F.A. emblem heading serve to keep the public informed of our activities.

Members Plan Activities

All of the activities of our chapter have been instigated by the members and all responsibility of their success has been dependent on committees of members with a minimum of supervision by the advisor.

No organization works merely for the sake of working. The fact that many of the chapter activities are a means of building up a treasury balance offers an incentive for their accomplishment. Our chapter, consisting of only 12 members, during the past fiscal year handled a little over eleven hundred dollars. A member is bound to have interest and pride in an organization in which he is responsible for one hundred dollars worth of work during the year. It is also his privilege to determine the disposition of the money. We have built up our chapter worth to six hundred fifty dollars, have set up a loan fund of one hundred dollars from which members may borrow for their farming programs, have purchased one hundred dollars worth of war bonds, have donated to charitable organizations such as the American Red Cross, have built up a chapter library, and have purchased recreational equipment.

It is my belief that the interest in an F.F.A. chapter varies in direct proportion to the participation of the members in

Co-operative Marketing of Turkeys

THE Mohawk Valley Chapter of the F.F.A. which is in the Agricultural Department of Arms Academy at Shelburne Falls, Massachusetts, has during the last three years built up conservatively a successful co-operative project in the marketing of turkeys raised by the members. This experience may encourage co-operative enterprises in other chapters.

Three years ago a project consisting of 50 turkey poults was started by one of our F.F.A. students, Fred Parker. He raised the poults in confinement and was so successful in keeping the mortality down that he marketed 48 of them. One large one was reserved for the Parker family months before they were marketed; seven were sold locally, and finally, after considerable search for an outlet, the rest found themselves on display in the Brockton Public Market show window with a "Super Deluxe" sign posted before their plump breasts.

This venture proved so successful that the next year two other Future Farmers of our chapter and one adult farmer pooled their efforts on their respective home farms. The total number of poults purchased amounted to 300. This was the banner year for the net profit per bird, with all expenses deducted, was an average of $3.00.

Last year, three members of our organization and three adult farmers purchased co-operatively 1,100 poults. The expenses were $3,208.42 and the receipts were $5,925.75, making a profit of $2,717.33. This was not so high as the previous year because of the higher cost of labor and feed. Also ceiling prices hampered marketing for some farmers.

This year, we ordered 1,765 poults for delivery during the months of May and June. Because the labor shortage involved in picking turkeys by hand has exhausted our labor resources, we have turned to the electric picker to do the work next year. This picker is a project just off the production line in our school shop.

Altho we find raising turkeys involves a lot of hard work, the social side is not neglected. Mr. Lloyd Thomas, the buyer for the Brockton Public Market, invited the turkey raisers to attend a banquet in Boston, and to make it a more perfect day provided tickets for a very good location in the Metropolitan Theater. While on this spree, a tour was made of the Hood Milk Plant in Charlestown. We also visited the largest turkey-growing establishment in eastern Massachusetts where a special mechanical turkey-picking demonstration was conducted for us.

Our chapter is now trying to either rent or buy a place so that we can establish a poultry killing plant. The leadership of the instructor and chapter adviser, Mr. William H. Tufts, has been invaluable without taking initiative and responsibility from the boys. The project has

Purebreds Every One

Thad McLellind, with his registered Guernsey bull, and David McLellind with his registered heifer, are members of the Central Chapter of North Carolina, J. A. Dobson, adviser, which recently won the Dairy Improvement Contest in that state. Twenty-four registered dairy animals and several grades are owned by 13 members of the chapter. As a prize the chapter will receive a registered bull of a breed to be named by the chapter

Boyd and Kenneth Waite, first and third American Farmers from Kansas, now operate a 1,200-acre farm, including a quality herd of 200 registered Herefords. All of this is an outgrowth of their farming programs in Winfield High School. They are examples of the hundreds of farm boys who have made good as farmers from a good beginning in vocational agriculture and have continued in attendance in young-farmer classes

Postwar Instruction

(Continued from page 51)

and nature of the units of instruction. And it must be continuous thruout the year. It should serve as the connecting link between the learner, the teacher, the classroom or laboratory, and the farm at all times. Let us do straight thinking on the purpose, the importance, and the most effective means of carrying out systematic follow-up of instruction with young and adult farmers in our classes.

Conclusion

In conclusion, teachers of vocational agriculture are strategically situated as far as the future of their instructional opportunities is concerned. There is no limit; the horizons of educational service have been pushed back, far back. Ours is a golden opportunity. Our wares no

well known and sought after by rural and urban folk alike. Last year over a million strong sought the benefits of the Rural War Production Training program. There is no limit unless it be our very selves.

We have learned the importance of systematic planning, of systematic instruction, and of systematic follow-up of instruction. We know how to teach young and adult farmers and they keep coming back for more. With our ready access to the broad expanse of agricultural research, to the current thinking of the leaders in the total agricultural field, and to the needs, interests, and desires of young and adult farmers, we should plan our postwar work and be prepared to work our postwar plan to the greatest advantage of the greatest numbers of young and adult farmers.

It is only thru such readiness that we can hope to hold our high rank in the

Organizing Farm Work

(Continued from page 46)

of how tomatoes were and could be picked.[3]

Farmer to Teach Himself

Work simplification, however, can probably contribute most if it causes the farmer to become his own job analyst. It is here that the teacher of agriculture can make a real contribution. The teacher can challenge the farmer to question his work methods. He can show some of the possible means of improvement. Even if the teacher goes no further than to point out the simple guiding principles, he will have reawakened and stimulated interest in farm operations. In many respects, instruction and leadership have been inadequate in this area. Yet there is no phase in agriculture of more real interest to the farmer than how to do a job easily and quickly and still do it right.

Has Wide Application

From the point of view of the teacher, work simplification findings and techniques of study have a place in most subject matter instruction. When an improved practice is recommended, its chances of acceptance are greatly increased if an easy way of putting the improved practice into operation is also suggested. Thus the alert extension worker or classroom instructor may incorporate work simplification in his teaching without regard to the subject matter being presented.

As a by-product, thinking on the subject of simplifying farm work can have a long-time influence on design of equipment. If the importance of the farmer's time and toil is thus emphasized, work simplification can have a real influence on the way that farm equipment, machinery, and even farm buildings are planned, arranged, and constructed in the future.

In Conclusion

In teaching agriculture on the high school, college, or adult extension levels, at least three requirements for success in farming have been recognized. The successful farmer must know (1) good farm practice, (2) scientific principles of crop and animal production, and (3) business principles of good farm organization and management. Proficiency in two of these requirements, like two legs of a stool, is of little value without the third. It is not the intention of work simplification to minimize the importance of any one of these requirements. Rather, work simplification re-emphasizes the importance of farm practice and the mechanics of farm operations. It subjects the problems of physical operation to systematic study in somewhat the same way that crop and animal production and organization problems have been studied. It assumes that people can be taught to take the same analytical point of view with regard to their own physical activity that they are asked to take with regard to other things that surround them. Current research and teaching both in agriculture and in industry indicate that this assumption is not an error.

[3]Oberholtzer, J. W., *Making Movements Count in Picking Tomatoes*, Purdue University Agricultural Extension

Partnership Agreements

(Continued from page 45)

Ownership of personal property. The ownership of the personal property, the machinery, livestock, and feed, should be on a 50-50 basis. Any other arrangement requires considerable computation in making annual settlements, and after a few years when all the livestock and the equipment have been replaced by the partnership, these items will be owned 50-50 anyway. It is suggested that the personal property be appraised at the beginning of the partnership and the son buy half interest by cash purchase or a note according to the convenience of the partners.

In many instances the son has accumulated an interest in livestock thru projects in 4-H Club or F.F.A. farming programs. Some instances have been observed where the son had worked with the father for several years before a partnership was set up and the father saw fit to give the son a part interest in personal property as a bonus for the contribution already made.

The method by which the son becomes a half owner in the personal property is not important so long as this ownership is obtained at the beginning of the partnership. When this has been done and the essentials for a successful partnership are met, the partnership is ready to operate as a going concern.

The annual settlement. The best way to illustrate how the family partnership works is to take an actual example and follow thru the steps in making an annual settlement. The following example involves a Michigan farm operated by a father and his son. They operate 200 acres with 160 acres of tillable land. The livestock consists of 17 dairy cows, 8 feeder cattle, 5 sows, 28 ewes, 180 hens, and the usual amount of young stock. The father owned all the real estate and the son bought a half interest in the personal property at the beginning of the partnership, so the contributions of capital were as follows:

Investments Within the Partnership

	Total Farm	Father's Share	Son's Share
Real estate	$16,547.00	$16,547.00	$0,000.000
Personal property			
Machinery and equipment	1,978.00	989.00	989.00
Horses	970.00	485.00	485.00
Cattle	1,960.00	980.00	980.00
Hogs	637.00	318.50	318.50
Sheep	331.00	165.50	165.50
Poultry	185.00	92.50	92.50
Feed	1,596.00	798.00	798.00
Total personal property	$ 7,657.00	$3,828.50	$3,828.50

Farm account records were kept on this farm. The following table shows the cash receipts, cash expenses and purchases for the year. All cash taken in was divided as it was received, and all cash expenses and purchases were shared 50-50.

The Year's Cash Record

Cash Expenses and Purchases

Item	*Total Farm*
Buildings, fences, etc.	$ 63.42
Machinery expense and purchases	1,880.61
Taxes	97.49
Cattle purchases	479.10
Sheep purchases	160.00
Poultry purchases	32.00
Feed	266.09
Crop expense	302.77
Miscellaneous	37.13
Total	$3,378.72

Cash Receipts

Item	*Total Farm*
Horses	$ 175.00
Cattle	1,309.39
Hogs	1,528.70
Sheep	372.53
Poultry—Meat	142.56
Egg sales	398.32
Dairy product sales	2,079.21
Crop sales	735.13
Machinery traded in	1,075.00
Labor off farm	34.80
Miscellaneous	16.00
Total	$7,866.64

Since cash recipts and expenses were shared equally during the year, each partner received a half of $7,866.64 or $3,933.32. Also each partner paid out half of $3,378.72 or $1,689.36 leaving each a net cash income of $2,243.96.

According to the agreement, each partner was to be paid for his contribution of labor and capital, so, if these contributions were unequal, one partner would owe the other at the time of the annual settlement. In our example the father owned all the real estate and half the personal property, so his contribution of capital was $16,547 greater than the son's. Since the son paid half the taxes and half the maintenance cost on the real estate the father is entitled only to interest on this excess investment to make the settlement an equitable one. If we assume the going rate of interest is 4 percent the father is entitled to 4 percent on $16,547 or $661.88 more than the son. This settlement could be accomplished by the son paying the father $330.94 (one-half of $661.88) out of his net cash income. After this final settlement the father's net cash income for the year would be $2,243.96 plus $330.94 or $2,574.90 and the son's net cash income would be $2,243.96 minus $330.94 or $1,913.02.

If for any reason the son should buy an interest in the real estate or buy other land to be operated as a part of the partnership, the capital settlement would be made accordingly.

As the father gets older it is common for him to wish to contribute no labor to the partnership personally or perhaps he might be able to contribute only part-time help. When this takes place, the difference in contribution for labor can be settled annually by the father paying the son for one-half the difference in the value of labor contributed. It of course becomes necessary under these conditions to put a value on the labor contributed by each partner. This feature of the partnership is especially desirable for the long-time partnership because it would work just as well as long as either of the parents was living whether they are actually working on the farm or not.

Farm records. Since this is a business partnership, provision should be made for keeping some kind of farm account records. Records of cash receipts and expenses are the minimum requirement along this line because this type of information is needed to make the annual settlement. If inventory records are included with the cash record, sufficient partners to make an accurate analysis of the business as well as file income tax returns. It is not important who keeps the records as long as they are accurate and accessible to all concerned.

Partnership forms available. We are sure that reading this article will not solve all your partnership problems. If you are interested in studying this problem further, it is suggested that you obtain a copy of "Father and Son Farm Partnerships," a bulletin written by E. B. Hill and published by the Farm Management section of the Michigan Agricultural Experiment Station of Michigan State College at East Lansing. Copies of the "Michigan Father and Son Partnership Agreement" are also available at your request.

A Suggestion?

COACH PAUL BROWN, popular head football coach at Ohio State University (on leave), holds a remarkable record as coach in high schools and briefly at Ohio State University. He, of course, is frequently called upon for talks before interested groups in Columbus and over the state. Many times he has made statements somewhat as follows: "If our boys make mistakes in football games, do not blame them; blame me. None of our boys ever intentionally makes a mistake in a game. If mistakes are made we have not taught them properly. We deserve the blame." Do you suppose this attitude on the part of a coach which, of course, is known by his players, has something to do with their "loving him as my own father?" Is there a suggestion in it for teacher-trainers, teachers of vocational agriculture and supervisors?

Banquet Banter

Toastmaster: Ladies and gentlemen, favored to have as speaker at our banquet this year one of assistants in teacher-training department, a college professor. Am told that Professor A had dream recently in which he was giving lecture in one of classes and, peculiarly enough, he fell asleep. Then when he awoke, found that class had left. Of course, this was only dream because in Professor A's classes it is not professor who goes to sleep. This gives further proof to the definition of a college professor as "One who talks in others sleep." Ladies and gentlemen, Professor A.

Speaker: It has been pleasure to come to this community and see what wonderful school you have—beautiful grounds, well administered school, and very obviously, strong and active F.F.A. Farm boys have many opportunities now which they did not have when many of us were young. Am told that toastmaster took train trip recently. He happened to sit not far from negro mammy who was carrying baby of few months. Baby had his private cafeteria and was supposed to be patronizing it. Apparently he could see toastmaster and that sight, as you can well imagine, interfered with appetite. Mammy coaxed him and coaxed him with little success. Finally exasperated, she said, "See hyar, suh. If you don' stop lookin' at dat boy and eat your

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