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The cover photographs show students at Parkland College, Champaign, Illinois, involved in learning through first hand experiences. In the

top photo, quotations at the Chicago Board of Trade are being explained. The center photo shows a student enrolled in an agricultural mechanics class learning to repair a tractor. The bottom photo shows students observing various aids in the classroom, including specimens, models, charts, and projected materials. (Photographs for Gayle W. Wright, Parkland College, Champaign, Illinois)

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FROM YOUR *A Farewell to the* EDITOR *Red Pen*

Martin B. McMillion

Thirty-six issues of *Ag Ed Magazine!* I can't believe, as the TV commercial goes, I did the whole thing. It was lots of work. It's been lots of Saturdays, Friday nights, early mornings, holidays and other times at work in the basement. I recall the issue I pasted up by gasoline lantern because the power was off and the one I did in my boots because the basement flooded. I remember dashing in to the office to get the index typed to learn that one secretary was at home ill and the other one had something more important to do; and I remember the valiant two-finger typing of a graduate student who came to my rescue. And then there was the time I edited manuscripts all the way to Pennsylvania on a card table in the back of our van in order to go on a visit with the family. Oh yes! I recall the issue I pasted up on my first day up from 10 days in bed with the mumps. Like the Pony Express, the MAGAZINE must go through.

In addition to all the expended red pens, some three dozen or more bottles of rubber cement has been spread and reluctantly sniffed while pasting down 432 square feet of paper, without becoming addicted. Being editor has meant receiving nasty as well as nice letters. It required 108 trips to the post office—three trips per issue, not to mention the trips to get stamps and to mail rejected articles.

Being editor has meant walking the floor waiting for the cover pictures to arrive. Many times the pacing was to await the arrival of an editorial idea. On top of these things which have faced all the previous editors, I had to learn my job twice. Hot type was used the first 18 months and offset was used the last 18 months.

Being editor has had its good aspects. I kept up my reading; Oh boy, did I! I read every word in each magazine two or three times, and read several of them out of the dictionary. The best ideas and innovations of the profession were "funneled" into my basement. I've had the opportunity to become acquainted with many people—teachers, teacher educators, and supervisors in the United States and a few ag educators from all over the world.

I've had lots of help with the MAGAZINE. Thanks go to those who wrote the articles and especially to the special editors who have identified authors and kept the articles flowing since the article drought of that first year, before I appointed special editors who started the articles rolling in. The picture editors, the book review editors and the historical editors have done their jobs well. Thanks men! My appreciation goes to the present business manager, Charles Lebo, and his wife and to the Ridenours who previously held that demanding job.

The NVATA headquarters staff has given valuable support in writing articles, providing a forum to explain the needs of the MAGAZINE at the conventions, and encouraging the winners of the Career Exploration Award
(Concluded on next page)

Introducing the New Editor

The new editor, James P. Key, grew up on a dairy farm in Tennessee and graduated with a B.S. in Agricultural Education from the University of Tennessee. He did his student teaching under a former editor of the Agricultural Education Magazine, Bob Warmbrod, now at Ohio State University. After a tour of duty with the Air Force as a transport pilot, he taught Vocational Agriculture and Agriculture Mechanics in the Shenandoah Valley of Virginia and completed his master's degree at VPI.

He continued graduate work at North Carolina State University, achieving the doctorate under another former editor, Cayce Scarborough. After graduation he moved to Oklahoma State University to assume the duties of Teacher Educator in Agricultural Education. He teaches the introductory course in Agricultural Education for undergraduates, Research Design, and other graduate courses and is conducting agricultural careers research through the Agricultural Experiment Station.

Jim and his wife Jean have two children, Jimmy and Cindy, who are raising Jersey calves, Angus cows and Shet-



James P. Key

land ponies on their small farm. Jim is chairman of the administrative board of his local Methodist church, vice chairman of the Board of Directors of the college Wesley Foundation, treasurer of the Full Gospel Business Men's Fellowship and active in community affairs. In addition he maintains currency as a transport pilot in the Oklahoma Air National Guard, flying C130's. ◆◆◆

Improve Teaching by Putting VOCATIONAL Back in the Program

C. Douglas Bryant
Teacher Education
North Carolina State University

Maybe we should organize the work of the teachers of agriculture in multi-teacher programs so each teacher serves a community (geographic area) within the school district.

It's not unusual these days to observe all sorts of practices which in one way or another affect teaching effectiveness. Take a school where students are permitted to elect agricultural education (whatever it is called) where seniors have first priority, juniors second priority, and sophomores third priority with no freshmen in the school. If enough seniors elect the program, then no juniors or sophomores can be accommodated.

What about a school offering agricultural education options on a quarter or semester basis where students can drop in or out at will with or without a previous experience.

How about a multi-teacher agricultural education situation where students elect specialized options and in so doing never see a shop or other facility used by students in another option?

Finally, what about the teacher who gives students the opportunity to "cut out" on any units they wish, so long as they take a zero grade and do not bother other students? What if the ones who "cut out" are the very ones who in the judgment of the teacher most need the skills being developed occupationally?

Perhaps these four situations are ample to suggest that agricultural education, as a program, and teachers of agriculture in particular are being tested these days on teaching effectiveness. Clearly such practices (and they really exist) suggest that all sorts of arrangements are possible when "agricultural" subject matter becomes the prime educational expectation in the program.

But what about the "vocational" expectation that should go along with study in agricultural education? How much attention is being given to arrangements and practices which will enhance agricultural education to really be vocational education? Can a local program that is not vocational in nature be an effective agricultural education program

where you work or teach? Can a teacher who is driven by agricultural content be an effective teacher of vocational agriculture today?

THINK VOCATIONAL. What does the "vocational" part of our program title mean anyway? Does it mean preparing students for occupations in agriculture? Would effective teaching in vocational agricultural education (whatever it is called where you teach) mean that learners are developing toward some occupational goal in agriculture?

What about instruction in mechanics and management in today's agriculture? Is there any agreement at all that producing an agricultural product involves at least 50% mechanical and a 25% management work effort? Are our curriculum guides organized this way? Do we actually teach as though this were the case? What agricultural products have your students produced lately?

Tough questions! Yes, they are all tough questions. Yet, they need careful consideration when effective teaching is the issue.

THINK PEOPLE AND THEIR LEARNING SITUATIONS. Perhaps our whole system needs to do a little rethinking on what we are all about. Could it be that we have thought success for so long we fail now to see the real opportunities everywhere to make our instruction more effective. Perhaps we have seen all the homes of our students in ways that failed to let us see one home completely. We have seen students as being active in F.F.A. and failed to see those students who were not involved, really. Or, maybe we saw students with supervised occupational experience (S.O.E.) programs in a manner that caused us to lack a sense of value in helping one student without an S.O.E. program to get one.

Maybe, as teachers we have viewed the school district so long we can't find any small communities today. The small communities are still out there in school districts getting their job done with or without help from vocational agricultural education programs. Maybe we should organize the work of teachers in multi-teacher programs in such a way that no teacher has responsibility to the total school district. A strategy among teachers to divide the school

(Concluded on page 126)

CONTINUED FROM YOUR EDITOR

and the Outstanding Young Teacher Award to write articles.

Thanks to my colleagues at VPI for being understanding when they had to register more than their share of students and do other things because I was home "magazing." Thanks to the various secretaries who kept up the index and picture files and typed the letters. Thanks to my wife and kids who stayed home every Thanksgiving, Christmas and five days scattered over every month including vacation month for three years. There are others

who should be thanked.

These bits of trivia were originally meant to be a form letter to be sent to various people, but when I got a letter from the picture editor saying, "Unfortunately, many teachers, supervisors, and teacher educators do not fully appreciate the extent of effort required for the editor to get MAGAZINE out," I decided to share it with everybody.

—MBMc

Why You Should Teach Reading in Vo Ag

Carl Lee Rexrode
Instructor of Agricultural Education
Bridgewater, Virginia

Many vocational agriculture teachers are doing a great job of teaching reading and subject matter. With all of the assignments taken on by an agriculture teacher, one may ask questions about why he should teach reading. "Isn't teaching of reading the assignment given only to English teachers? Shouldn't the students have learned how to read in elementary grades?" The answer to both questions is "No." Ask yourself, "How is the student going to learn to work with materials in agriculture if he is not able to read?" As agriculture instructors, we need to give students a built-in incentive for learning to read. The student must have a purpose for reading. The material must be interesting and something he can relate to his future.

The printed word is a means of communicating in order to cause an individual to think on his own. We may read to gain knowledge, to draw our own conclusions, and to use the information essential to our own situation.

How may we find out the reading ability of our students? Many of us know our students through home visitations and community contact. We may cautiously use permanent records to determine student health, achievement and intelligence which may hinder or help reading skill. Observation

The teacher can plan instruction with direct attention to vocabulary after searching the assignments for unfamiliar words that the student will meet.

The teacher needs to pre-teach vocabulary and concepts which would block understanding.

of each student in class is helpful for determining speed of learning, speaking ability and writing vocabulary. We must also know the student's means of handling ideas. Oral readings may reveal something about the student's reading ability. There are many tests used to determine a student's level of reading. Once you know his level, provide materials that can be understood and that can broaden his level.

What do we have in agriculture courses for students to read? We are fortunate that there are no certain textbooks for vocational agriculture students. Agriculture departments have a wealth of materials for the students to read. Since the teacher selects his own teaching aids, the material may be of various levels to meet the needs of the students. The teacher also selects

the topics to be taught. Thus, when the units are selected to meet the interest of the students, the material is more likely to be read and used. Charts, films, bulletins, booklets, filmstrips, pictures and magazines are provided to give information and aid. Supervised occupational experience programs, field trips, judging events, laboratory experiences, leadership and participation in community activities are beneficial in helping students to acquire the knowledge, skills and attitudes necessary for their future success.

What do you know about teaching reading? From my own experience, I have found that a student can learn much by being familiar with a book's table of contents, the index, glossary, and from the pictures. According to Ellen Laman Thomas and H. Alan Robinson in the book, *Improving Reading in Every Class*, every teacher should teach reading skills of using vocabulary, comprehension, flexibility of reading rate and problem solving.

What about vocabulary training for the students? Almost all of our units in agriculture have some words that the student must recognize and understand in order to use the information. How can a student select tools if he doesn't know the names of the tools

(Concluded on next page)

COMING ISSUES COMING ISSUES COMING ISSUES

COMING ISSUES

JANUARY — Production Agriculture — Preparing to Feed the World

FEBRUARY — FFA — The Intracurricular Activity

MARCH — Agricultural Mechanics — Keeping the Wheels Turning

APRIL — Supervised Experience Programs — Learning by Doing

MAY — Agricultural Products — Preparing Agricultural Processors

JUNE — Camping and Summer Activities

JULY — Facilities — Planning, Maintenance and Improvement

AUGUST — In-service Education and Teacher Conferences

SEPTEMBER — Fairs, Shows and Contests — Competition, Practice and Motivation

OCTOBER — Preparation for Agricultural Resources and Forestry Occupations

NOVEMBER — Multiple Teacher Programs — Patterns and Priorities

DECEMBER — Ornamental Horticulture Occupations — A Growing Field

COMING ISSUES

needed? How can a student wire a light to a switch if he doesn't understand various terms as hot wire, ground wire, 115 volts, single phase, circuit, fuse box, 20 amps and single pole? How can a student keep records on his occupational experience program if he doesn't understand the terms: inventory, expense, income, capital, unit, depreciation and net income?

How does a teacher teach vocabulary? The student learns to use vocabulary through field trips, visual aids, models, flash cards, word-find puzzles, dictionaries, libraries, charts and graphs. Wide reading develops a good vocabulary. We must provide many magazines, books and newspapers for classroom use. Students practice their use of vocabulary through writing, public speaking and FFA experiences. The teacher can plan instruction with direct attention to vocabulary after searching the assignments for unfamiliar words that the student will meet. When using new words, the teacher may write them on the chalkboard explaining where the words come from and how the word is used. The teacher may help the students develop a means of figuring out the meaning of words from the way they are used in the material read.

How do we help students to retain or comprehend information? The student better comprehends if his interest is captured and if he can relate the information to his past experiences. The student needs a purpose for reading and help in knowing how to read in order to reach his goal. The teacher needs to pre-teach vocabulary and concepts which would block understanding. Reading materials need to be provided on a suitable variety of levels for the students. The student needs tips on how to study as SQ3R (surveying, questioning, reading, reciting and reviewing) which was designed by Francis P. Robinson of Ohio State University. Teachers can paraphrase, finding the key thought in an article and encourage the student to question: Why is that tool called a chipping hammer? How does an arc welder work? Why does my Dad own an expensive Harvester? Should I raise dairy or beef cattle or both?

How do I know and teach the rate at which to read? Before reading an article, it is helpful to skim for the key thoughts. When answering questions it helps to scan the material. When the article is on something familiar to a person, he may read faster than if the material is of an unfamiliar nature.

The teacher must know the needs of the student and give instruction on daily assignments based on those needs. The teacher must decrease the guidance so that the student may depend upon himself.

Many of our assignments require problem solving or giving a hypothetical or a real problem for finding the solution. What is the cost of a bird house project? How can I repair a tractor? How can I maintain safety? How much should I feed my dairy cow or beef steer? The teacher needs to assess student skills, analyze assignments, provide practice in these and the needed problem solving skills in instruction. As teachers, we need to develop skills essential for solving life problems. In the twentieth century, agriculture knowledge is rapidly changing while life marches on with its everyday challenges.

By choosing the agricultural education field, a person will be engaged in many worthwhile and enjoyable activities. The one essential and purposeful experience for any teacher is to correlate reading with subject matter. A major goal of all agriculture teachers should be to produce students who can read. This skill is highly relevant to any future agriculturalist. ◆◆◆

district up into smaller geographic areas for teachers to develop vocational expectations of the program might work wonders. In so doing, real solutions to some problems faced at school might be forthcoming.

VOCATIONAL EDUCATION FOR LEARNERS IN AGRICULTURE. Effective teaching in vocational education for learners in agriculture is our business. When the "farm" was our "melting pot" the task was very simple—or so it seemed. Today, agriculture is different. Students today are different people, too. And, communities are different, changing day by day.

Effective teaching requires as much, if not more, thought on what is vocational these days as it does on what is agricultural. To me, the vocational part in effective teaching involves among other things the following:

- (1) What is learned in "agriculture" results from something done in agriculture.
- (2) The something done in agriculture involves decision-making opportunities for students (good deci-

sions, bad decisions, but student decisions).

- (3) The something done in agriculture also involves solving problems that learners are now facing or likely will face in agriculture. For some students, it will be selling a good steak, for others fattening a steer will be the need.
- (4) Solving problems which involve the production of an agricultural product involves a heavy emphasis on mechanics and management competencies. We must allow all learners to get involved in all the aspects of producing an agricultural product.
- (5) Allowing a teacher and students to make mistakes along the way. Sure, there are successes, too. But, is education that never leads to mistakes *and* success really education? Is it vocational?

Yes, effective teaching means in 1976 what it meant in 1917 — "learning by doing." Vocationalizing agriculture means getting "learning by doing" to work in 1976. This is really the big challenge to effective teaching in vocational agriculture today. ◆◆◆

MANAGEMENT OF STUDENT PRACTICE IN THE OUTDOOR LABORATORY

*Maurice J. Hannon
Instructor of Conservation
Allegany County BOCES
Belmont, New York*



Maurice J. Hannon

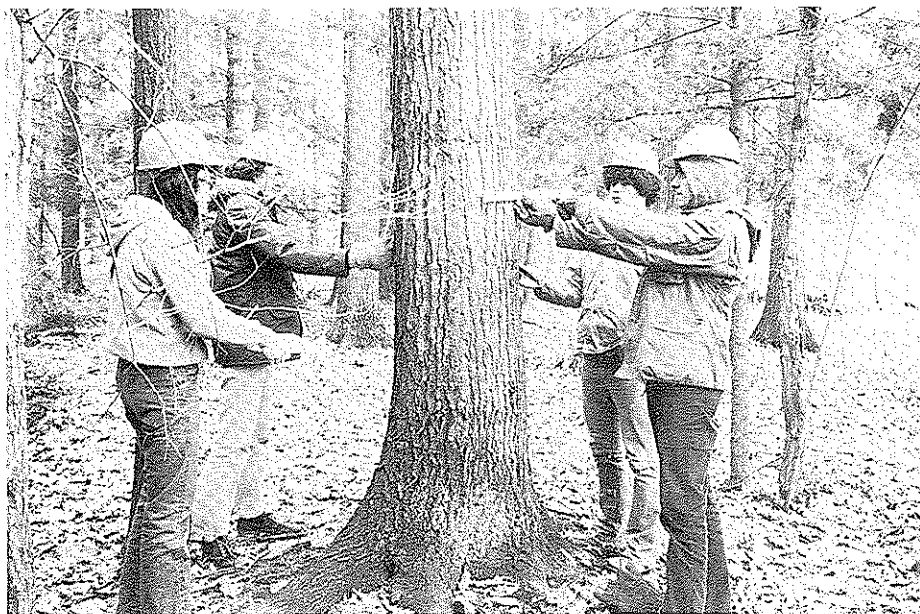
A traditionally classroom-oriented teacher could very easily be overwhelmed with the problems confronted while managing students working in "nature's wide open spaces." However, with some careful planning and the development of good management techniques, any competent teacher can provide for a satisfactory learning experience in the out of doors.

My own position as a Conservation and Heavy Equipment teacher has provided me with the practical experience necessary to set up the following keys to managing student practice in the outdoor laboratory.

First of all, provide the background, or theory, for the unit to the whole class. This rationale will provide a framework for the students to follow when they later divide into smaller groups. In planning for this type of instruction, select realistic units with attainable goals that provide for practical, usable skills. Any detailed instruction or demonstration of procedures at this phase will save much valuable teacher time later on when trying to move from group to group overseeing and coordinating.

Secondly, make sure that all students will participate in the small group. Each should have his own personal task. This will help eliminate discipline problems that arise when students are not busy. Explain that there will be a rotation of tasks so that each person gets a turn at practicing a certain skill. At this point tell students that each has the responsibility for helping fellow workers who will be following them at that particular job. Students soon realize that this is perhaps the very best test of their ability. Can they help someone else perform the same task?

Along with this small group organization for practice, a group leader is essential to the functioning of this type of class management. Emphasize



Students at Allegany County BOCES try out their biltmore sticks on a tree on a 350 acre school laboratory.

that these are working leaders who must also perform the same tasks as the group members. Students earn a leadership role by their conduct and participation. The leader is directly responsible to me for the tools and equipment used by his/her group. By giving leaders a clipboard and a different colored hardhat, a certain amount of incentive is provided. Leaders are responsible for checking off the list of skills practiced and tasks completed as each group member rotates through the assigned work.

A fourth very important requirement for managing a class out of doors is the condition and amount of equipment available. When I was a first year teacher in a brand new program, this was my biggest problem. Students must be occupied! As each year's orders and requisitions came due, I was able to obtain a good supply of tools and equipment necessary to carrying on outdoor practice. Your supply will determine how many groups you can

handle and how much practice each can accomplish. My program has developed from the availability of 350 acres of school property. Approximately 60 percent of this land is tillable with the remaining 40 percent in woodland. If a suitable outdoor area is not available, then an outdoor practice program would certainly not be feasible.

The fifth key to this type of management is to provide for evaluation with the student upon completion of the assigned tasks. He should feel an increase in competency at the skills practiced. At the same time, I continually review the place this project may fit into the overall progression of good conservation practices.

Following these procedures should lead to a well controlled and informative experience for all students. The ultimate goal of this type of management is for the teacher and students to share in the learning experiences possible in an outdoor laboratory. ♦

Meat Cutting Classes—Popular With Adults

*James Mostad and Dale Carpentier
Teachers of Agriculture
Minot, North Dakota*

Have you ever wondered what class you could offer to your high school students and incorporate into an adult education program? I am sure there are several offerings that you can think of. We think we have one that you might not have thought of—Meats and Meat Cutting. We have done this for two years now and it gains more student interest every year.

We offer a nine-week meats class to our Vo Ag II students and an eight-week adult Meats class. With the large size of our Vo Ag classes, we split them into two groups. One half has meats and the other half has leadership and at the end of 4½ weeks we switch groups. In the high school class we concentrate on five main areas:

1. Identification of cuts (beef, sheep, hogs, and veal)
2. Grades and grading of live animals and carcasses
3. Economics of butchering and cutting your own meat
4. Actual slaughtering of beef, sheep, and hogs
5. The cutting and wrapping of meat

The slaughtering and cutting is spread over the nine-week period so we can spend adequate time on the first three areas, especially identification of cuts, in our 4½-week period. On days that we slaughter and cut meat we put both groups together so that everyone gets the same opportunity to participate. One of our objectives is to give every student the opportunity to participate in the slaughtering of these animals and cutting them into the retail cuts.

We start the adult class about the same time we start the high school class. It is set up to meet one night a week for three hours for eight weeks. If you plan to teach an adult meats class you should plan on spending an average of four hours per class. This allows time for setting up before the class starts and cleaning up after the class.

At the first adult class we cut up a half of beef and explained in detail what we were doing. We also explained

to the class the objectives and the schedule we would follow at the next seven classes. By cutting meat at the first meeting we really get the interest and attention of the class.

At the second session we discussed the live grades of beef, hogs, and sheep and showed slides depicting these grades. We then went to the sales ring and watched them run cattle through the ring. As each went through we discussed the grade it would probably get. The only drawback was that most of the good fat stock had been sold earlier in the day and the highest grade that we saw was a commercial.

At the third session we discussed carcass grades of beef, hogs, and sheep. We then went to a local packing plant and evaluated some actual carcasses on the rail. We then came back and discussed the economics of buying live animals and butchering them as compared to buying a carcass. We also spent time discussing and practicing the identification of retail meat cuts.

The fourth session was designed to fall right after the opening of deer season. We cut up two deer that night in addition to a lamb we had butchered during the day for our students. We finished the evening off by slaughtering a beef animal that one of the class members had bought.

The fifth session was started by going over the identification of cuts of pork. We then cut up two hogs that had been butchered that day in the high school classes.

The entire sixth session was spent cutting up the beef we had butchered during the fourth session. Once again everyone got a chance to do some cutting.

At the seventh session we skinned two hogs which would be cut up the next day in the classroom. Here again we tried to get as much class participation as possible.

At the eighth and final session we reviewed and answered any questions that they had. We had also asked that everyone bring in some kind of meat that they had prepared at home for the class to sample. Some of the

culinary delights that were brought in included canned tongue, dried venison, roast lamb, roast beef, roast pork, pickled tongue, and rocky mountain oysters. Before we handed out their diplomas we asked that they all evaluate the course and make suggestions if they had any.

From the evaluation we gathered the following information:

1. Everyone felt the class was very good and that they got a lot of practical experience from it.
2. A large majority said they would have liked to go to a supermarket meat counter and see how the stores cuts compared to the meat we cut. They were also interested in the commercialism used by the stores. We had planned such a trip but we just didn't have time.
3. A large majority said they would have liked to have one evening devoted strictly to the curing and smoking of meat and different recipes that could be used.
4. Many expressed a desire to have the class run longer so they could get more opportunity to cut meat.

I would guess that many departments don't think they could offer this type of class because they don't have the facilities, equipment, or knowledge. We had the same problems when we started but we have been able to work them all out.

We did our slaughtering in the shop over a drain and flushed it with water and drain cleaner when we were done to prevent clogging. The skin and entrails were given to one of our students who wanted to use them for fox bait. For skinning, we hung the animal on an arm hoist. We had access to a cooler to hang our beef in, but this might not be the case in most communities. For sheep and hogs, which only have to hang about a day or so, we put them in a garage over night to chill. This is why late fall and early winter is an ideal time to hold this kind of class.

We cut all of our meat in the classroom. We turned the heat off and
(Continued on page 130)

Agribusiness Career Exploration Winner

Bill Gutshall
NVATA Region IV
Sperry-New Holland Award Winner
Chillicothe, Missouri

All eighth grade students participated in an orientation program of Career Awareness. Four presentations were given throughout the year in each of the six social studies classes. The presentations included: "The Importance of Agriculture and Agribusiness," a film "A Step Ahead" by the New Holland Company, a tour through the local Vocational School, and an interest test "What is Agribusiness?"

The Agribusiness I program is designed to give the students a basic understanding in the field of livestock production and management with special emphasis on how this knowledge could be used in agribusiness careers. The students are involved in activities that would develop their understanding of agribusiness occupations and skills required. They are exposed to the large variety of occupations through the audio visual media, field trips, guest speakers, personal research and interviews. One-fourth of their time is spent in the field of Agribusiness mechanics.

The Agribusiness II class deals in the study of field crops, soils, fertilizers, chemicals, and parliamentary procedure. Exposure to agribusiness careers is continued through guest speakers and the audio visual media. It also includes studies in the agricultural mechanics field.

While Agribusiness I and II are designed to give the students a broad knowledge of both agriculture production and agribusiness careers, Agribusiness III begins to specialize in areas the student may need in ag-related jobs. The course outline includes the following areas: Office Procedures, Business Money Management, Selling and Salesmanship, Human Relations, Advertising and Promotion, Marketing Agriculture Products, Office Machines, Job Interview, and Preparation for the Agriculture Occupational Experience (AOE) program.

In 1974-75 AOE (Agribusiness IV) students were placed in the following jobs: ag sales and services, ag processing, farm management, and ma-

chinery sales. The pay scale was from \$2.10-\$3.45 per hour.

Each Monday an evaluation of the previous week was taken. The evaluation included such things as the number of hours worked, wages earned, new experiences on the job, routine jobs, jobs that the student could perform with competence.

Regularly scheduled visits are made by the AOE advisor with an average of at least 12 visits per school year. Each employer evaluates the student to help determine quarter grades. AOE students invited owners, managers, and supervisors to the annual Parent-Son Banquet.

Need for the program

Over the years I have become increasingly aware of the large number of my Vocational Agriculture students that entered into an agribusiness occupation. I began to wonder if these students might not have benefited more from their Vocational Agriculture classes if they had been geared more toward the agribusiness world instead of production agriculture. Also, because of small supervised farming programs many of the students dropped production agriculture because they could not relate to the advanced courses in the last two years of Vocational Agriculture. In addition to these two problems most non farm students were not aware of occupational opportunities in the field of agribusiness.

Planning, development, and status of the current program

The head of the vocational agriculture department in Chillicothe was enthusiastic about a program of agribusiness. After conferring with him and the other agriculture teachers in the system it was agreed that the present production agriculture classes were already overloaded and it would be necessary to add to the present curriculum in agriculture instead of revising it if we were to provide agribusiness classes. After the idea for an agribusiness program was approved by

the superintendent and the board of education, the State Department of Education was very helpful in establishing the program.

I began with a career awareness program that reached down into the eighth grade. The first year there were only three Agribusiness classes and the eighth grade awareness classes. The Agribusiness Program is now an important part of the total Agriculture Program in the Chillicothe Schools. There are two sections of Agribusiness I, two sections of Agribusiness II, two sections of Agribusiness III, one section of Agribusiness IV, and the eighth grade awareness program.

An advisory committee was established in 1974-75; an occupational survey was taken in the summer of 1975; all senior students were placed on the job, and training stations were carefully selected. Training agreements are used for each student, and regular visits are made periodically to each student. After eighth grade students are enrolled, each student is visited in his home prior to the beginning of Agribusiness I, and 100 percent of the students in Agribusiness are members of the local FFA Chapter and some are receiving state and national recognition.

Instructional materials used

In addition to the resource persons, field trips, and films, I used a wide variety of instructional materials. Following is a list of the instructional materials found to be most helpful.

Comic Books on Careers and Career Bingo by King Features, *Applying for a Job, Succeeding on the Job, Here's How in Ag. Production, Ag Supplies, Here's How in Ag Supplies, Here's How in Ag Mechanics, Here's How in Ag. Products*, all by Interstate Publishing Co. and *Opportunities in Ag Occupations, Business Procedures and Records, Business Money Management, Selling and Salesmanship, Advertising and Promotion, Marketing Agriculture*
(Concluded on next page)

Products, Agriculture Chemicals, all by Ohio State University. Films: *A Step Ahead-Career Education in Agri-Business*, New Holland Co. *Agri-Business Careers in Missouri*, Vo-Tech. Schools in Missouri.

Appraisal of the Program

Agribusiness started in 1973 with 34 students and now has an enrollment of 90 students. An advisory committee was established in 1974-75 and meets four times per year. It was very instrumental in developing the occupations survey that was taken in the summer of 1975. As a result of the survey, 20 agribusiness firms indicated they were interested in employing students that were enrolled in the AOE Program.

The highlight of the program was

the enthusiasm demonstrated by parents, students, ag businessmen and school personnel.

I was selected to represent Missouri in writing an Agribusiness curriculum. Ten states were represented and the project was titled "The Mid-America Vocational Curriculum Consortium."

Plans for continuing or revising the program

The program will be continued in the school system very much as it has in the past year. Since the program has grown faster than we expected, plans are now being revised. There is a need for an additional instructor, more training stations are being selected and approved, and we are always looking for ideas to make the program better.



A placed student gets some pointers from his on-the-job supervisor.

opened the windows to keep the meat cool which makes it easier to work with. We laid a bench on the classroom tables to cut on. A piece of plywood 2½' X 8' X ¾" would work well also. The main thing is to keep it clean.

The knives are an important part to a meat cutting class. They should be of high quality steel so they hold an edge a long time. The use of a steel will help keep your knives sharp so they won't need to be sharpened as often. It is difficult to cut meat with a dull knife and it hurts more when you cut yourself, which is bound to happen. The first year we had this class, we purchased three knives and a steel. We already had a meat saw and a couple of cleavers. The meat saw is an absolute necessity. The knives we bought were a skinning knife, a ten inch steak knife, and a boning knife. It is very hard to get much class participation with so few knives however. The total cost of the three knives and the steel would be about \$40.00. After we got involved in meat cutting we bought an additional five sets of knives so we could involve more students.

An electric meat grinder is an invaluable item if you plan on doing a lot of cutting. One of these can be made in the shop for about \$60.00 as

compared to buying one for \$250.00 or more. For starting a class a hand grinder would be satisfactory.

You are probably wondering where we got our experience and training. Let me assure you that neither of us were butchers in our youth or at any other time. With the exception of doing a little slaughtering at home, we got most of the fundamentals from a one-week meats workshop at the North Dakota State University Meats Department in Fargo. Our instructors, Dr. Verlin Johnson and Dr. Martin Marchello, were very knowledgeable in this area and provided us with a wealth of information. With the knowledge that we got from this workshop and studying a book, the National Livestock and Meat Board's *Uniform Retail Meat Identity Standards*, we set up our program. Even with the book and the information given us at the workshop, there was still no better teacher than experience, as we soon found out. The more of it we did the more confident and competent we became.

Another area that we felt might be a problem was what would we do with the meat after we cut and wrapped it. As it turned out the problem was that we had more people who wanted the

meat than we had meat. The first year we started our high school meats class we planned to process one sheep and one hog. As it turned out we did two sheep and three hogs and could have done more. This year with the high school class and the added demands of the adult class we processed two beef, two sheep, five deer, and seven hogs. As with the previous year, we still had a demand for more. All we ask of the people who buy the animals is that they bring them to the Vo Ag Department and furnish wrapping paper.

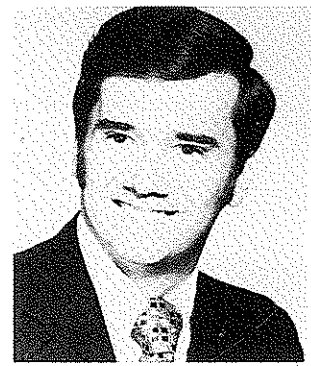
We have found that our Meats class has added a whole new dimension to our Vo Ag program. It has stimulated a whole new interest among our students, even the ones who are hard to motivate. Many parents have told us how amazed they were at their sons' or daughters' knowledge of meats when they went to the store. An offshoot of our high school meats class is the interest we have generated for our FFA meats judging team.

From the response to our adult Home Butchering and Meat Cutting class we found that there was a definite community need in this area. Our first objective in the high school and

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Promoting Inquiry in Teaching

L. H. Newcomb
Assistant Professor
The Ohio State University



L. H. Newcomb

In the eyes of many people, vocational agriculture has been blessed in that there has been no basic textbook. The fact that there is no basic text, but rather a multitude of curricular resources, opens up unlimited opportunities for more effective teaching. If vocational agriculture teachers used a basic text, there would certainly be the temptation to restrict the range of potential enrichment of learning. There would likewise be the temptation to have students take turns reading aloud or answering the questions at the end of each chapter. The fact that a basic text is not used forces teachers of vocational agriculture to be more creative and innovative as they seek to impact on learning.

However, in the absence of a basic text, vocational agriculture teachers too often resort to telling the students what is important while recording key notes on the board. Two other favorite variations of this basic strategy are using transparencies and using handouts. Certainly there is nothing wrong with any of these approaches *unless* they are used day after day. A good question to ask regarding these approaches is how much use do these approaches make of basic principles of learning.

In fact, the conditions under which agriculture teachers operate without a basic text might even be more closely aligned with sound principles of learning than would otherwise be the case. Let's examine some very basic principles of learning and then examine possibilities for utilizing such principles as we teach without the benefit of a basic text.

Psychologists and practitioners alike have suggested for some time that students learn more when they "*inquire into* rather than being *instructed in*." We also know that learning is an active, not a passive process. Keeping these two principles of learning in mind, let's see how they can be operationalized in teaching vocational agriculture.

Why not teach by using the full complement of curricular resources available to the teacher of vocational agriculture? When studying an area, get students to the point that they actually want to know the correct answer, best procedure, or proper solution to a problem. After creating such a felt need, the teacher can then move toward having students *inquire* into.

Instead of the teacher telling the class the answers, procedures, or solutions, he can have the class determine the answers for themselves. Lancelot says: "When the teacher explains, he does the thinking for his pupils. His mind has discovered and established the relationships which the pupils must grasp if they are to understand what they are studying; and he simply tries to make them see the relationships which he sees . . . Those things which the pupils have thought through for themselves until they understood them do not easily get away from them; or if they forget them, the pupils can nearly always bring them back by thinking them over again."¹

With proper direction, the student can move from dependence on the agriculture teacher for information to independently searching many sources of knowledge for answers. Students can obtain the information they need from searching commercial publications and brochures, extension leaflets and booklets, basic student references, textbooks, or other printed information. However, printed materials are only one curricular resource which students can *inquire into*. They can also contact business people, successful practitioners, extension agents, SCS personnel, and any number of other "people sources." Throughout such learning ventures students are *actively* involved in the act of learning and are certainly "*inquiring into*" rather than being "*instructed in*."

¹W. H. Lancelot, *Permanent Learning*. (New York: John Wiley and Sons, Inc., 1954), p. 66.

The typical vocational agriculture teacher has such a wealth of teaching material at his fingertips that he is often overwhelmed with the vastness of possibilities. Perhaps he would do well to take an inventory of the basic learning materials available and then match materials to lessons to be taught, being sure to provide for variety, independent inquiry, and learner activity.

As one seeks to move students from *depending* on the teacher as the source of knowledge to *inquiring* more independently, he needs to realize that this change has to evolve gradually. Students have to be taught how to handle this new responsibility. In essence the teacher has to be a good director of supervised study. He has to guide students in their search for knowledge rather than leaving the room and hoping everything will be all right.

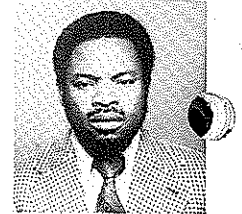
However, once the period of supervised study or inquiry is ended, it does not mean that the teacher should proceed to the next topic. Hardly. In fact the teacher is now ready to help students realize the full meaning of their new knowledge. He is now able to clarify, emphasize, repeat, illustrate, and explain. Students can come together to discuss their findings and the meaning of them. The skillful instructor directs such discussion toward his predetermined end. During such discussions, final conclusions are reached and plans can be made for application of that which has been learned.

When the above ideas are used, teachers do not need a textbook; instead they can use many sources of information including themselves. Students are able to move from having insufficient information to applying new knowledge in a variety of ways, each of which *actively* involves them in their learning and provides for *inquiry into* rather than *instruction in*. As conclusions are drawn, the teacher can then summarize using the board, the overhead projector, or other appropriate procedures. ◆◆◆



Leon A. Mayer

OCCUPATIONAL EDUCATION IN AGRICULTURE IN NIGERIA



O. C. Onazi

by Leon A. Mayer and O. C. Onazi*

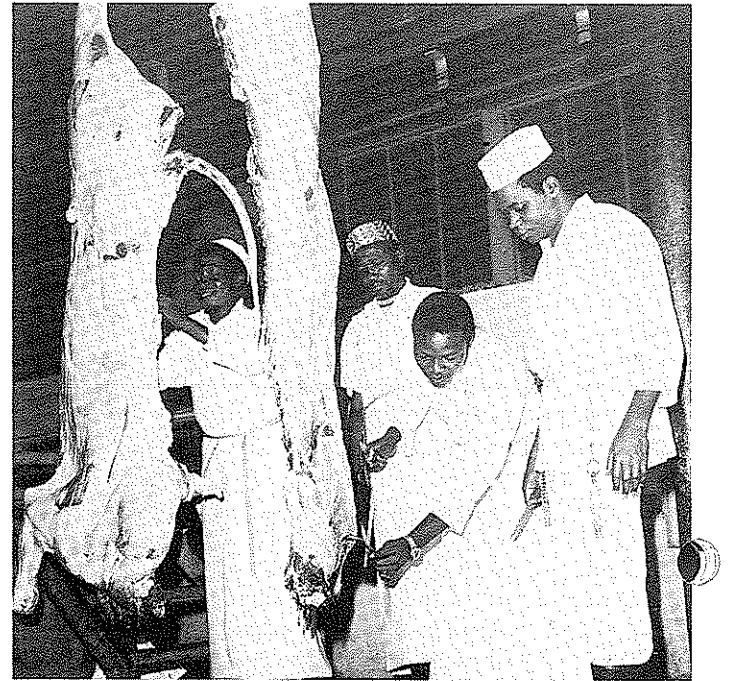
Nigeria is a developing nation with a total land area of 225 million acres, equivalent in size to the States of Texas and Oklahoma. Although much publicity has been given to the mineral wealth of Nigeria, and especially its rich oil resources, the country is essentially an agricultural country. About 22 million acres of land is devoted to the cultivation of arable and tree crops, while 20 million acres are in the forest reserves and the rest are either used for grazing or left fallow. It is estimated that the agricultural sector employs around 70 percent of the labor force and supplies most of the country's internal demand for food and produces substantial cash crops for export. However, with a rapidly increasing population, the present standard of farming and the level of productivity must be improved to cope with the increasing demands.

The critical importance of agricultural manpower development as a means of accelerating agricultural development, and consequently national development has been recognized. Agricultural education does have an important role to play in facilitating national development. In this overall effort, the development of intermediate-level agricultural manpower is of highest priority. The Federal Government has estimated the manpower requirements in the agricultural sector for the third National Development Plan as 20,000, out of which, over 17,000 are in the junior and intermediate levels.

Vocational and technical education in agriculture is organized quite differently in Nigeria than in the U.S.A. The typical secondary school in Nigeria, is patterned after the British Grammar Schools; consequently, the curriculum is essentially concerned with preparation for entry into the university. The concept of the comprehensive secondary school, which would include a vocational or occupational education component, is just in the process of being introduced in the country. A few secondary schools in the more educationally advanced parts of Nigeria are attempting to implement this concept, by offering an agricultural science course, which is still academically rather than vocationally oriented.

Vocational education in agriculture has, however, been introduced outside of the secondary schools system in a specialized institution, the Farm Institute. Most of the twelve States of the Federation have developed and operate several Farm Institutes, administered by the State Ministries of Agriculture.

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Students enrolled in a diploma course in livestock products inspection, develop meat inspection skills while assigned to an abattoir during three month supervised field experience.

These Institutes enroll, in residence, farm boys who have completed a six year primary school. The boys may range in age from 16 to 20, or older, and may include some young married men. They receive classroom instruction in modern scientific methods of farming, while receiving practical training on a farm maintained by the school. The course extends over one academic year.

At the conclusion of the course, the Ministries, in cooperation with the local government, give each boy a pair of oxen, oxen drawn equipment, and other tools and supplies, which he has learned to use on the school farm. He is expected to go back to his family's farm and introduce this improved agricultural technology. The local authority is also expected to provide additional land so that ultimately the boy can become established in farming on his own. In this way, he would contribute to the introduction and development of progressive farming methods in the local community.

The farm institute program has been on a very small scale and only moderately successful. Many of the States are considering phasing out of these Farm Institutes, which hopefully might be replaced by vocationally oriented agri-

(Concluded on next page)

CONTINUED OCCUPATIONAL EDUCATION . . .

culture courses in primary schools and in developing comprehensive secondary schools, as universal free primary education and secondary development proceeds.

Another form of vocational training in agriculture is the Farm Training Centre, also administered by State Ministries of Agriculture. Primary school leavers of employment age are recruited by the Ministry of Agriculture, and sent to a nine month course in modern scientific agriculture with required practical experience on a farm, which is operated by the Farm Training Centre. Those who successfully complete the Farm Training Centre course are posted to the field, as agricultural instructors or field overseers, the lowest cadre in the Agricultural Extension Service, operated by the State Ministry of Agriculture. It is this cadre of staff who bear the brunt of the extension effort in the States. As change agents, they carry the new agricultural technology and innovations to the farmers with whom they maintain direct contact.

Technical education in agriculture is offered in specialized post-secondary institutions called schools of agriculture. Some of these schools of agriculture are administered by Universities, some by State Ministries of Agriculture, some by the Federal Ministry of Agriculture and other Federal Government agricultural agencies, and some by agricultural research institutes.

The program of all of these schools is similar. Two year courses are offered in general agriculture, home economics, animal health and husbandry, poultry husbandry, range management, horticulture, farm mechanics, irrigation agronomy, soil conservation, and forestry, leading to the award of a certificate. The holders of these certificates are posted into the field by the state Ministries of Agriculture as agricultural assistants, the second cadre of agricultural extension field workers.

After at least one year of successful field work, these certificate holders may be sent back to the schools of agriculture for advanced level courses, of two years duration, leading to the award of a diploma. Offerings include general agriculture, home economics, animal products inspection, and most of the other specialized areas of agriculture offered at the certificate level. Holders of these agricultural diplomas, go back to the agricultural extension field work, and are promoted to agricultural superintendents, the third cadre of extension field workers.

The teaching program in these schools of agriculture includes both classroom instructions and practical training conducted on school farms and in various specialized laboratories and clinics. A three-month period of supervised field

experience each year is a feature of most of these certificate and diploma courses.

The agricultural certificate and diploma courses are considered terminal. Although, some basic science, mathematics, social science, and English may be included in the curriculum, these courses are generally not regarded as appropriate preparation for entry into B.Sc. courses in Agriculture in the University. However, a few outstanding certificate and diploma students have been successful in gaining admission to the Universities, on an individual merit basis.

Another type of institution offering post-secondary technical education in Nigeria is the polytechnic. Some of the polytechnics offer agricultural related certificate and diploma courses, primarily of a mechanical or engineering technology nature, such as agricultural mechanics, irrigation engineering, and tractor and heavy equipment maintenance.

The vocational technical institutions for agriculture in Nigeria have come a long way in their effort to provide for the training of intermediate level manpower to facilitate agricultural development. Government officials and educators are aware of the need to develop a good vocational type of agriculture program in secondary schools in the Federation. Prospects are good that this kind of development may occur in the near future.

The one most crucial problem in the future development of vocational-technical agriculture in Nigeria is the need to overcome the strong tendency to use an academically oriented, rather than a vocationally oriented approach to curriculum development and teaching in institutions offering occupational education in agriculture. Several new developments show promise as a means of solving this problem and thereby facilitating further development. A B.Sc. degree in agricultural education has been introduced in one of the Nigerian Universities, and a second University is planning offerings in agricultural education. The Nigerian Association for Agricultural Education was established recently, and shows promise as a means of developing agricultural education as a profession in the country. Both of these developments will help to foster teacher education in agriculture in the near future.

As agricultural educators from the U.S.A., Nigeria, and other countries throughout the world come together through the medium of international conferences, and otherwise, it will be interesting and useful to share some of these common and unique experiences and problems in a world profession of agricultural education. ◆◆◆

CONTINUED MEAT CUTTING CLASSES . . .

adult class was not to make them professional meat cutters, but give them the confidence and fundamentals they would need if they did want to butcher and cut up an animal. Our second objective, an equally important one, was to make them wiser meat consumers. As we later found out, this is

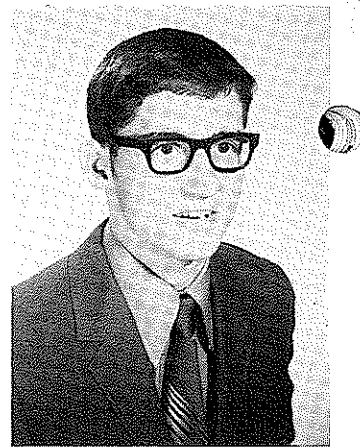
exactly what they wanted.

If you are looking for a new and exciting class to add to your program, I would highly recommend a class in butchering and meat cutting. I think you would enjoy it as much as your students.

With everyone complaining about the high cost of meat, I think it is our obligation to the community and the livestock industry to point out that meat is still a good buy, whether you buy it over the counter or cut it yourself. ◆◆◆

Meeting Student Needs— The Personal Approach

Richard M. Foster*
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Richard M. Foster

In the past, agricultural educators have mainly emphasized subject matter content when attempting to meet the needs of their students. Although this has been and will continue to be an important factor in agricultural program planning, these educators must begin to consider the emotional, developmental, and maturation needs of learners in the planning process. Students in vocational agriculture are generally in the adolescent period of 14 to 18 years of age and are constantly undergoing many basic personal and social changes. It is this aspect that we must recognize and take more into consideration. Basically, these changes are:

1. *Developmental variation*—Learners in early adolescence are at various levels of growth and maturity. Students of the same age will vary in height, weight, emotional maturity, and other ways. These students need help and guidance to cope with and understand these developmental differences, in order to reinforce their self-images and maintain feelings of adequacy.
2. *Attitudes and value assimilation*—During the secondary school years, learners tend to re-define and reorganize the values of most importance to them. More stable attitudes concerning a variety of concepts are formulated and are generally retained throughout the students' lives. Attitudes and values are affected by the learners' experiences, family, school activities, and peer groups. The attitudes and values formed at that

time are extremely difficult to change in later years.

3. *Occupational exploration*—Students become more serious and more realistic about making occupational choices during their adolescent years. Selection of an occupation is usually regarded as one of their prime concerns. Many choices are brought about by imitation of an adult that the student likes and respects. As learners progress through adolescence, they become more practical in the selection of an occupation, putting greater emphasis on the methods used in pursuing an occupation, as well as the financial returns expected from the potential career.
4. *Assuming an adult role*—Learners must acquire a social behavior that will enable them to communicate with persons of all age levels, handle problems that arise in a social atmosphere, and be able to function as individuals in the community. A sense of self-confidence and a social competence is necessary for learners to emotionally mature into adulthood.

As agricultural educators, we must realize that just the presentation of subject matter is not enough to meet the emotional and maturation needs of students. We can better help students by practicing a more personal approach to instruction such as, treating each student as if he were the most important learner in the classroom; being fair with students in disciplinary actions and everyday situations; and by treating students with the same respect which we might like to receive from them. There are numerous ex-

amples that could be cited to express how these can be accomplished.

Provide personal attention to all students—The agriculture and agribusiness education instructor is in an ideal position to work with students on a one-to-one basis. As instructors visit supervised occupational experience programs, they become keenly aware of the learners' problems relating to their activities, families and friends. This added insight into the students' backgrounds enables an instructor to develop a better understanding of the learners' individual needs and adjustment problems. Opportunities for personal counseling arise and instructors should take advantage of them to minimize as many personal conflicts as possible for the students. Being readily accessible to the learners and being a good listener will soon earn the instructor the students' respect.

Practice positive reinforcement—All students should have the opportunity to experience success and receive recognition for their achievements. With the vast opportunities available through the day-class program, FFA chapter activities, and supervised occupational experience programs, the agriculture and agribusiness instructors can provide learning experiences that will enable all students to experience success. When students are recognized for their achievements, it helps to build the self-image that is extremely necessary to all learners. Adjustments to changes in society, personal development, and peer group standards are more easily accomplished when the student has a good self-image and possesses confidence in his own ability.

Exerting a positive influence—Students in the adolescent years readily
(Concluded on page 142)

*Richard Foster has a Masters degree and has taught Vocational Agriculture four years in Iowa.

Statewide Testing in Vo Ag

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Agricultural Education
University of Arizona

Anyone who has ever walked into the classroom as a teacher has at sometime or another questioned the effectiveness of the effort. Such questions as "how good is my teaching?" or "how good are my students?" are often asked by vocational agriculture teachers. Answers to these questions are particularly difficult to quantify objectively in vocational agriculture where there are few criterion-leveled evaluative instruments with established norms such as found in other subject matter areas. The use of a teacher-made test provides some indication of student growth in understanding or performance but does not provide any indication as to how their performance compares to that of other vocational agriculture students. Further, anyone who has constructed a test knows that they can be easily made to reflect a high or low degree of understanding simply by altering the difficulty of the items included on the examination. Comparison of scores or percentages of students passing such an examination is therefore meaningless.

An Expressed Need

Teachers have felt they were doing a good job of teaching, but a poor job of evaluating student performance. There is evidence to support this statement in the relatively low reliability indexes of teacher-made tests which generally run about .60, and have weakness of composition which results in students being able to correctly answer questions without knowing the subject matter. This is not to say that teachers are not capable of developing quality evaluative instruments, but simply an indication of the difficulty of such a task.

A question might also be raised as to the wisdom of expecting teachers to invest such effort in developing examinations. This duplication of effort would seem to be a waste. However, the difficulty of developing a standardized evaluative instrument in vocational agriculture also has its "pitfalls." The wide diversity in agriculture and the resulting variation in curriculum from school to school dims the prospects of such an effort. Even among schools teaching similar units within their curriculum, there is great diversity in the items stressed and competencies developed.

A Testing Program

In 1969, the Department of Agricultural Education at the University of Arizona launched a project designed to put in the hands of teachers evaluative instruments of known quality and performance. It was hoped that by doing so, teacher time previously spent in developing examinations could be reduced; teachers would have a means of comparing their student's performances with other vocational agriculture students and the teacher would have a higher quality evaluation instrument. One measure of the success of this effort is reflected in the fact that during the past six years over 40,000 tests covering 25 different units of instruction have been utilized by teachers in Arizona.

The results of this project are only now being finalized. The tests were developed for the instructional units included in the Arizona Core curriculum and for inductive units included in the specialized curricula. The tests are part of the curriculum guides for the Core and five specialized curricula, plus a

teacher reference for each instructional unit and a student reference for most non-mechanics units. Test items were developed for each of the educational objectives identified in the respective teacher references. Thus, the examinations are objective referenced so that in the future teachers will be able to select test items appropriate to the objectives for which instruction was provided. If they teach the entire unit as outlined in the curriculum guide they can use the examination in its entirety and compare student performance with the norms established for each test.

The reason the tests have been successfully used by schools offering widely differing programs is they were developed around recognized principles common to all geographic areas and types of agriculture rather than on specific enterprises or practices. The tests are composed of from forty to sixty multiple-choice items. None of the tests have reliability indexes of less than .82 which is significantly higher than the average teacher-made test and very high considering the relatively small number of questions. All items on the test have positive discrimination indexes meaning that a larger percentage of students getting the higher scores on the entire test are getting an individual test item correct than those getting the lowest scores. The tests have a difficulty factor centering about .50 which means that the average number of incorrect answers on an examination is about half of the total number of items on the test.

A Grading Service

After the tests were originally developed
(Concluded on page 137)

Success Formula for Teaching Adults

Charles E. Miller
Agriculture Teacher
Morganfield, Kentucky



Charles E. Miller

I suppose that every vo ag teacher is his own best evaluator of the program which he is conducting, whether with high school students, young farmers, or adult farmers. The teacher realizes whether his program is as effective as it should be. He knows its weaknesses as well as its strong points if he is genuinely interested in the product of the program.

Having taught vocational agriculture in the same community for more than thirty years, I find myself continuously evaluating the effectiveness of the program in an informal manner. Of these thirty years, twelve of them were with high school students, young and adult farmers, with the post-World War II Institutional On-Farm-Training Program a department responsibility. Since 1958 we have been devoting full time to four adult farmer classes. As with most 22-year-old beginning teachers, the feeling of inadequacy was paramount when faced with the responsibility of teaching adult farmers. During the early post-war years, every vo ag teacher in Kentucky had the responsibility of adult classes. According to agriculture workers and leading farmers, the prospects for such programs were discouraging, as it was their general attitude that farmers would not attend such evening meetings.

Despite the gloomy forecast, 24 farmers appeared for my first adult class effort. They were very sympathetic and helped me tremendously through the early sessions.

I discovered early that farmers are faced with genuine, current problems. It was much different from trying to pull genuine problems from a group of high school students. Then another discovery appeared. One cannot meet an adult class ill-prepared. Most teachers probably have managed to "tread-water" through a few high school class sessions. Not so, with adults.

The ratio of about 4:1 has been a significant one to me. It is essential that about 4 hours per 1 hour of class time be spent in immediate preparation.

In reviewing the program over the years, many mistakes are apparent. Then too, some methods were used that have contributed significantly to the program's success. One point is apparent. Farmers are busy folks. Farm organizations, civic duties, church activities, and vacations are just a few items that require time. A class session composed of 35 busy farmers means that 70 to 90 farmer hours, including travel time, are being allotted to this particular session. If these hours are not profitable, the next class session attendance will be down significantly. If poor teacher preparation is obvious, program suffocation is inevitable.

We have a few class students who have been enrolled

continuously since 1946, and there are several who are in and out of the program due to specific interests and the course of study. Enrollment figures since we have been working full time with adults demonstrate this:

1958	110	1967	171
1959	114	1968	176
1960	105	1969	152
1961	113	1970	180
1962	129	1971	166
1963	135	1972	162
1964	152	1973	166
1965	157	1974	171
1966	165	1975	162

In order to work as closely as a teacher should with class members for optimum effectiveness, a program should not enroll as many as we have. Yet I believe that keeping a large number interested and aware of agricultural progress may be better than more intensive work with a smaller group.

Some personal ideas, relative to conducting class meetings, have also emerged over the years. I hold these to be very important:

1. Have a course of study that deals with the problems faced by class members.
2. Adequate class preparation for each session, and the anticipation of questions that may arise from the discussion and securing good research data for providing answers is essential.
3. Promptness in class session beginning time and closing time is very important. If a class is scheduled for 7:30, begin at 7:30 and end at the specified time.

Actually, follow-up instruction on the farm, in the office, and organized class study tours are really where the most effective teaching occurs. Reminding students of points covered in class discussions and encouraging the execution of certain class decisions are very important. Group tours and field studies relative to practices or decisions emerging from class sessions increases the effectiveness of the teaching efforts.

A good teacher will spend many hours conversing with individual students about ideas planted in the farmers' minds several weeks or months previously.

We are fortunate to have an area vocational education center in our county that provides instruction in farm welding, diesel mechanics, farm electricity, tractor maintenance, combine operation and care, farm carpentry, and

(Concluded on next page)

CONTINUED SUCCESS . . . TEACHING ADULTS

When one uses the profession of a vocational agriculture teacher primarily as a springboard to a greater paying position, there is a tendency to doubt his real community effectiveness.

related subject matter for members of our adult farmer classes. These have proved to be very effective over the years. These classes meet after our regular class sessions are completed, and usually 50 to 60 of our regular class members enroll in at least one of these courses.

In summarizing some personal convictions on agricultural education for adults, I will mention a few:

1. A vo ag teacher must have an intense desire to teach farmers. He must be interested in agricultural change and in seeing change occur in class members.
2. He must be willing to work, since hard work is essential for a successful program. The need to work elbow-to-elbow with a farmer-student arises often. Perpetual "clean britches" are not compatible with a good vo ag teacher.
3. A time-clock worker in agricultural education is a misfit. Many days will involve 12 to 16 hours of work. Then a few hours for fishing and hunting can be spared with a clear conscience.
4. Effective use of an advisory committee for adult programs should head the list in developing and maintaining a good adult program. Our local advisory committee is comprised wholly of farmers

and meets twice annually to help plan and evaluate the program.

5. The need for adult and young farmer programs should be obvious in areas where high school programs are justified. Every vo ag teacher should project his efforts into the young farmer and adult farmer phases of education. These post high school classes serve as an excellent media for understanding community needs, and as stimuli to keep abreast of the rapid technological changes occurring in modern agriculture.
6. A good public relations program is essential in keeping the community knowledgeable about adult education. Use of newspapers and radio are very effective. Presenting programs to civic organizations and other groups have proven to be very effective in informing taxpayers about the program's objectives and accomplishments.

The monetary rewards of teaching vocational agriculture for adults is not lucrative. Personal satisfaction gained for helping individual farm units become sound economic productive units is more important. We mention units because I am currently working with many young men who were not even born when I began teaching their fathers on the same basic units 30 years ago.

Even though personal satisfaction of seeing students perform doesn't feed and clothe the children, to a dedicated teacher this lends itself to personal happiness. When one uses the profession of a vocational agriculture teacher primarily as a springboard to a greater paying position, there is a tendency to doubt his real community effectiveness. ◆

CONTINUED STATEWIDE TESTING . . .

oped they were field tested by teachers through a grading service administered by the Department of Agricultural Education. Teachers indicated which units they were using, the number of students in their classes and the dates when the units were to be taught. The Department mailed the tests to the teacher prior to the date indicated for completion of instruction. Teachers administered the test and returned them to the Department for scoring and analysis. The scores were returned to the teacher and the individual responses on each test item were recorded. After 300 students had taken a test, the results were analyzed and weak items were removed.

After the tests were field tested, analyzed, and finally revised, norms were established for each examination

thus providing a norm leveled, objective-referenced examination. Thus, the teachers will soon have at their disposal examination instruments designed to measure student understanding of pre-determined educational objectives. The examinations can be used in their entirety by the teachers to compare individual performance with the norm groups or individual test items of known performance can be utilized. Tests currently available include ones covering the Core Units on: Weeds, Soils, Livestock Feeding, Livestock Selection, Livestock Health, Plant Growth and Development, Insects, and Livestock Production Management.

Summary

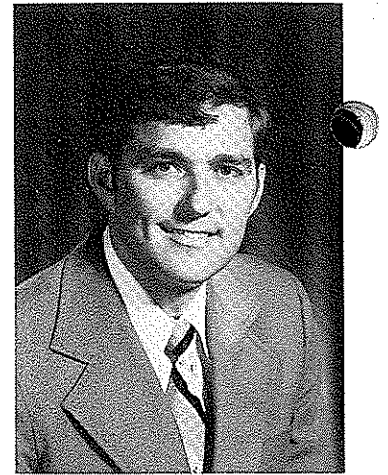
This project has demonstrated that standardized tests can be developed in vocational agriculture under certain

conditions to serve a wide geographical area and a diversified agriculture. Specifically, a successful test development program must be based upon a recognized curriculum which addresses agricultural principles and concepts. Further, the test items need to be developed so as to measure achievement of recognized instructional objectives associated with each subject matter area.

The availability of quality evaluative instruments of known performance certainly appears to have potential for assisting teachers do a more effective job of teaching. Their use will enhance the job of evaluation, they will reduce the amount of time required to prepare an examination and will provide teachers with a means of comparing the performance of their students to those of a larger group. ◆◆◆

That Terrifying Word and Effective Teaching

Gary Moore
Teacher Education
Purdue University



Gary Moore

There was one word that terrified me during my high school teaching days. The mere mention of "research" would cause me to become very uneasy. This terrifying word was first brought to my attention while studying to become a vocational agriculture teacher in college. The college professors would mention research in the same manner as a witch would talk about some magical potion.

Later, when I decided to work on a Masters degree, I was told I must take a research course. The prospect of spending a semester on research made me very unhappy. However, as I progressed in this course I realized research could provide insight into becoming a more effective teacher. Four discoveries I made in the research course concerning effective teaching are as follows:

Effective teachers ask questions while teaching.

Teachers who make frequent use of questions are generally more effective than teachers who do not. In a study conducted in Ohio this author, (Moore) involving 28 vocational agriculture teachers, found that high school students learned more when their teachers used questions in teaching. Other studies on teaching effectiveness (Rosenshine and Furst) have found that using questions that require thinking on the part of the students are better than those that require a simple yes or no.

There is a correct way to ask questions just as there is a correct way to use a table saw or perform a whip graft. Normally the teacher should ask the question, pause to allow the stu-

dents to think, then call on a *specific* student to respond. It is important that the teacher calls on a student by name. Many teachers encounter problems and get flustered when they ask "Does anybody know?" because the students just sit there. This can generally be avoided by calling on specific students. After the student responds the teacher should let the student know how good the response was.

Effective teachers let their students know what they are expected to learn.

It is logical to expect that students will learn better if they have a clear understanding of what it is they are to learn. However, it seems some teachers like to play "learning hide and seek." They teach so that students aren't sure what is important to learn and what isn't.

In a California study by Dalis, 143 tenth graders were divided into three groups. Before they were taught one group was told exactly what they were to learn, one group was told what they should learn in general, while the third group was given information that had no relation to what was being taught. The group of students who were told specifically what they should learn did indeed learn the most.

There is nothing wrong with telling your students what they need to learn. Teachers who do this will find their students learn more.

Effective teachers provide their students with feedback.

If students are to learn and achieve at their maximum level they need to know how well they are doing and what needs to be done for improve-

ment. This is shown by Page who involved 74 teachers and 2,139 students in an experimental study. He found that students had significantly better grades when their teachers wrote extensive comments on their homework and assignments as compared to students who received only a grade or just a few written comments.

This points out that teachers who give their students ample feedback as to what is needed for improvement instead of just a right or wrong answer or a grade are more effective when it comes to student learning.

Effective teachers get their students ready to learn.

An effective teacher will try to prepare his students for what they are about to learn. Horace Mann, one of the early leaders in education, said teachers who attempted to teach without first inspiring the student to learn are hammering on cold iron.

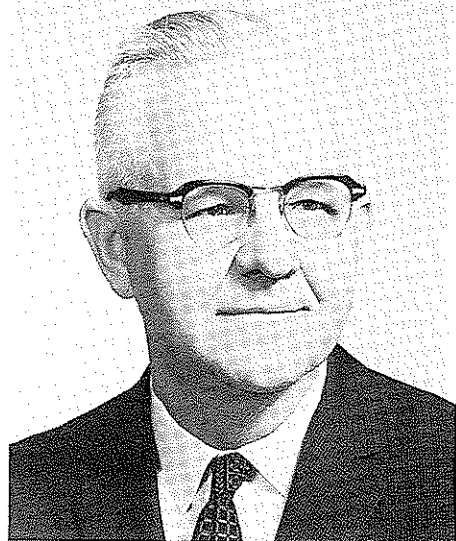
A study conducted in Connecticut (Schuck) illustrates this. Nine teachers were taught special skills in preparing students to learn (establishing set) while nine other teachers were not. The students who were taught by the teachers with special training in establishing set learned more than the students who were taught by the teachers who had not received the training.

A variety of methods can be used in preparing students to learn such as presenting the students with a problem, creating a difference of opinion, or playing on their natural impulses such as curiosity. (A more complete description of preparing students to learn is found in "The Forgotten Interest Approach" (Concluded on page 142))

Leader in Agricultural Education:

CLARENCE CAYCE SCARBOROUGH

by
T. R. Miller*



Clarence Cayce Scarborough, recipient of the 1972 AATEA Distinguished Service Award, stands tall among the outstanding leaders in Agricultural Education today. His warmth of personality and his understanding responses to concerns of people are combined with unbounded enthusiasm and cheerfulness to create an unforgettable individual. To his fellow workers, he is a man of influence not because of position, but because of creativeness, untiring questioning of the status quo, and positive encouragement to his associates. He possesses the gifts of courage, fluency, insight, and an unwillingness to compromise democratic principles to gain time or influence.

At North Carolina State University, Cayce Scarborough was three times awarded university-wide recognition as Outstanding Teacher in the School of Education, an honor determined by the students and faculty. His teaching included the fields of philosophy, secondary education, adult education, and teacher education in addition to specialized Agricultural Education. While Dr. Scarborough was at N.C. State University, approximately 500 students received their bachelor's degrees in Agricultural Education. He has also taught in summer sessions as visiting professor at Michigan State University, Cornell University, University of Minnesota, and Colorado State University, further attesting to his recognition as a real leader in our field.

Although Dr. Scarborough claims no

fame as a producer of research materials, his research competence has been amply demonstrated by the production of masters' theses and doctoral dissertations of his graduate students, which number approximately 125 for a seventeen-year period at North Carolina State University. Dr. Scarborough was a major influence in the development of the Doctorate in Occupational Education at N.C. State initiated in the fall of 1967. Five of his students completed this degree and five more were admitted to the program before Dr. Scarborough was called to Auburn University in 1973.

In the area of publications, Dr. Scarborough has credit for two books and numerous journal articles. The books are *Southern Hog Growing*, and *Fruit Growing*, both published in Spanish as well as English. Professor Scarborough is also well known for his six years of service with the *Agricultural Education Magazine* as editor, consulting editor, and secretary of the editing-managing board. And, in 1970, Dr. Scarborough received a U.S. Office of Education Grant and produced "Introduction to Agricultural Cooperatives—A Teaching Guide"—the first of its kind.

Major professional leadership positions held by Dr. Scarborough have included: American Association of Teacher Educators in Agriculture (President), N.C. Vocational Association

(President), N.C. Adult Education Association (President), American Association of University Professors (President N.C.S.U. Unit), Agricultural Education Regional Conferences (President), and Regional Research Conference (Chairman). Recently, he served as Chairman of the Resolutions and Program of Work Committee of the American Vocational Association. His memberships have also included Alpha Zeta (Advisor), Gamma Sigma Delta, Kappa Delta Pi, Phi Delta Kappa, Phi Kappa Phi, and the American Vocational Association.

Born and raised near Blue Springs, Alabama, Cayce Scarborough comes from a family of teachers; all seven children became teachers. Cayce started his career even before finishing his B.S. degree from Auburn (1935), by teaching in a junior high school. Then followed several years as Vo Ag teacher beginning at Linville, and concluding as supervising teacher at Beau regard High School, Opelika, Alabama. Chosen to be a state supervisor in Agricultural Education, Mr. Scarborough provided leadership to the Alabama F.F.A. program for two years until the U.S. Navy offered him a three-year "career" in W.W. II.

Mr. Scarborough began his college teaching career in 1946 at Auburn University as Associate Professor in Agricultural Education. In 1948, he was offered a graduate assistantship at the University of Illinois under the famous H. M. Hamlin. With due credit and grateful appreciation to his wife, Margaret, for her encouragement and help, Cayce completed his doctoral program in education in 1949.

Dr. J. Bryant Kirkland, first Dean of the School of Education at N.C. State University, recognized the leadership of Dr. Scarborough and persuaded him to come to N.C. State University in 1949 as Associate Professor in Agri-

(Concluded on page 142)



T. R. Miller

*T. R. (Tex) Miller is Associate Professor in Agricultural Education, North Carolina State University at Raleigh.

Job Mobility Patterns for Teachers of Agriculture

Ruth G. Thomas
Bush Fellow
University of Minnesota



Ruth G. Thomas

Coping with an inadequate supply of vocational agriculture teachers is a problem faced by several states, including Minnesota. Two effects of the shortage are the closing of vocational agriculture departments in schools, and the granting of temporary teaching certificates to those not qualified under the State Plan. Agricultural education programs have expanded without corresponding increases in the number of teachers graduated. The entrance of present teachers and new graduates into industry and self-employment in farming has made the shortage even more acute.

In response to this problem, a study¹ of job mobility patterns for vocational agriculture teachers in Minnesota from the school year ending in 1970 to the one ending in 1974 was conducted. The purpose of the study was to determine the rate of job-leaving among vocational agriculture teachers, the kinds of positions they took, and the sources of teacher supply. Such information was viewed as being useful to educational planners and teacher educators in meeting demands for agricultural education services.

Procedure:

Lists of all vocational agriculture teachers at secondary and post secondary public schools in the state were obtained from the State Department of Education for each year of the five-year period. The number of teachers averaged about 470 each year. The lists were compared year by year to determine which teachers had not changed

jobs, which had moved to another agriculture teaching position, and which had left the profession. A list of those who had left and a list of new entrants to the profession in Minnesota were compiled. These lists were circulated to agriculture coordinators, state department staff, and University of Minnesota teacher educators to determine the sources of new entrants and the destinations of those who had left the profession.

Major Findings:

Findings were expressed in terms of internal and external mobility and teacher tenure. Internal mobility was defined as movement from one agriculture teaching job to another within Minnesota. External mobility was defined as leaving the agriculture teaching profession and/or leaving the state.

Internal Mobility: Approximately three of every five high school, post secondary, and veterans teachers who changed teaching jobs changed schools as well. The remainder took a different agriculture teaching position in the same school. Half of the adult internal movers changed both job and school, and half stayed in the same school when they changed jobs.

Most high school teachers moved to another high school position. Post secondary teachers tended to move to a different post secondary agriculture teaching job or to teaching in a veterans agriculture program. No post secondary teachers moved to a high school position. Post secondary teachers included area vocational technical institute instructors, not college level teachers.

Most full-time adult teaching, internal movers went to agriculture positions. Veterans instructors tended to

move at an equal rate into adult jobs and other veterans jobs.

Movement of high school, adult, and veterans teachers into post secondary positions is very low. Thus, it is apparent that internal mobility is not a significant source of post secondary agriculture teachers.

External Mobility: Table I shows the destinations of teachers who left the agriculture teaching profession and/or left the state. Farming, and business and industry were the two most frequent occupational destinations of teachers at all educational levels. In the five year period studied, sixteen teachers left the state and fewer left agriculture teaching for each of the other destinations listed in Table I. It is apparent from the small number of deaths and retirements that the age level of agriculture teachers as a group is not high.

Teachers in adult programs had the lowest rate of external mobility, while post secondary teachers had the highest rate.

How did external and internal mobility compare? In three of four years compared, external mobility exceeded internal mobility. Thus, more teachers left agriculture teaching than changed jobs within the profession. During 1971-72, the one year in which internal mobility exceeded external mobility, the veterans program was implemented and a number of new adult positions opened in the state.

The mean percent for external mobility over the period studied was 11.1; that for internal mobility was 7.9 percent. Thus, out of one hundred agriculture teachers, approximately eleven will leave the profession and eight will move within the profession each year.

Teacher Tenure: Table II shows
(Concluded on next page)

¹Dr. Edgar Persons, Agriculture Education Division, University of Minnesota, directed the study. Researchers were Dennis Moeller, Julie Robinson, and Ruth Thomas.

TABLE I
Destination of External Movers by Teacher Category
Minnesota Vocational Agriculture Teachers 1969-1973

Destination	High School	Number of Teachers Adult, Post H. S., Veterans & Others	Total
Farming	30	9	39
Business and Industry	26	9	35
Out of Minnesota	14	2	16
Disabled, Death & Retirement	8	3	11
Self-Employed	5	4	9
Different Teaching Field	9	0	9
Educational Administration	6	3	9
Temporary Withdrawal (Military, Peace Corps, etc.)	8	0	8
Return To School	4	3	7
College Teaching	3	0	3
Extension	2	0	2
Government	1	0	1
Unknown	32	22	53
TOTAL	147	55	202

Table II
Status of 1969-70 Minnesota
Agriculture Teachers in 1973-74

Educational Level	% in Same Position	% Internal Movers	% External Movers	Total
High School	45.4	22.5	31.9	99.8
Post Secondary	51.5	9.0	39.4	99.9
Adult	73.2	12.0	14.6	99.8

teacher tenure over the five years of the study. Less than half of those teaching high school agriculture in 1969-70 were still in the same position in 1973-74. Almost one-third had left agriculture teaching in Minnesota. About half of the post secondary teachers were still in the same position while approximately 40 percent had moved externally. The adult teachers showed greater stability. Almost three-fourths were still in their same position, while only fifteen percent had left agriculture teaching in Minnesota. Because veterans programs were not yet established in 1969-70, tenure over the five year period could not be established for veterans teachers.

The major source of supply of agriculture teachers was new graduates. Re-entrants include former teachers who left agriculture teaching and returned. Sources outside vocational ag-

riculture teaching include industry, non-agriculture education majors, and non-agriculture teachers.

Conclusions and Implications:

It is more likely that agriculture teachers in Minnesota will remain in their jobs or leave the profession than move internally. Those that do move internally usually change schools as well as jobs. This finding implies a need among teachers for background in a variety of technologies and enterprises, particularly if such moves occur across agricultural areas. Also suggested is a need to provide in-service education opportunities for teachers who have changed locations and who face

²Copa, George and Robert Korpi. *Need For and Sources of Vocational Certified Teachers in Minnesota*. Minnesota Research Coordinating Unit for Vocational Education, University of Minnesota, Minneapolis, Minnesota, December, 1973.

new agricultural and educational problems.

The fact that internal mobility is not a significant source of post-secondary teachers, and Copa and Korpi's² finding that these teachers come primarily from outside the vocational agriculture teaching profession, suggest that such teachers could benefit from in-service courses aimed at developing educational competencies. The high rate of external mobility among these teachers suggests the need for investigating the reasons why they enter and leave agriculture teaching. Knowledge of reasons why agriculture teachers at all educational levels leave their jobs would be helpful to teacher education institutions in recruiting students and to educational planners in designing jobs and programs.

This study seems to indicate that the agriculture teacher job market will be able to absorb the veterans instructors as the veterans programs phase out.

Since agriculture education is still an expanding field, its personnel tend to be younger. As expansion slows, it is likely that the median age will rise and that a greater proportion of teachers will be lost to deaths and retirements than at present.

It is apparent that program expansion affects the personnel mobility patterns in existing programs. Educational planners must consider such effects when planning for program expansion.

The sizeable proportion of teachers leaving the profession indicates that viewing a temporary certification program as a short-term measure may be unrealistic unless ways can be found to increase the number of vocational agriculture graduates. One possible source not yet tapped to its potential is women enrolled in high school vocational agriculture programs. It may be more realistic to turn attention and energies to finding good sources of potential teachers from non-education institutions.

It is apparent that a sizeable loss of trained, experienced agriculture teaching personnel occurs in Minnesota each year. This loss contributes to the acute shortage of agriculture teachers in the state.

CONTINUED MEETING STUDENT NEEDS . . .

imitate particular adults that have earned their respect. It must be recognized that the teachers of agriculture and agribusiness education are often projected into the adult model role by their students. Instructors must set the best possible examples for their students to follow. Working with students on class or individual projects exhibits a spirit of cooperation that might be imitated by the learners. Being open-minded and asking others their opinions about the topic under discussion shows a willingness to listen to the point of view of others. Being considerate and fair in decision making helps generate respect, both for the

student and for the instructor. Agricultural educators are constantly under scrutiny by their students. They should, therefore, exhibit the kinds of characteristics that they would want their students to develop.

These examples of how agricultural educators can help meet students' developmental, emotional and maturation needs are not intended to be all-inclusive. However, they are intended to show that emotional needs of adolescents are important and can be met through personal interaction between the teacher and the student. Basic attitudes and values can be affected by instructors if they take the time to treat

the student with fairness, respect and consideration. A personal approach to teaching not only provides learners with examples needed for their own development, but it also develops respect for the teacher and provides greater efficiency of instruction due to a greater spirit of cooperation between the instructor and his students. Learners have emotional needs that have to be considered. We, as educators, must strive to meet these needs as well as agricultural subject matter needs. Only in this way can we educate the whole student and better prepare him for the task of living in our complex society. ◆◆◆

CONTINUED THAT TERRIFYING WORD AND . . .

proach" in the December 1974 *Agricultural Education Magazine*.)

CONCLUSION

A teacher can become more effective as a teacher if he will prepare the students to learn, let the students know exactly what they should learn, use questions while teaching, and then provide feedback to the students so they may improve.

These were the discoveries I made

in the research course. Research is not a word to be afraid of. Application of research findings can help improve teaching. ◆◆◆

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CONTINUED LEADER IN AG ED

cultural Education. In three years, the dynamic Caye Scarborough had risen to Professor and Head of the Department of Agricultural Education. His creative leadership development program in Agricultural Education over the next 24 years brought sustained national recognition to Dr. Scarborough and the department. One of the most unique aspects of the program was the team teaching of community study to student teachers with Dr. Selz Mayo, a national figure in the field of sociology, who was devoted to Agricultural Education.

The Caye Scarborough family in-

cludes wife, Margaret, two daughters and one son, all of whom have exhibited musical talent. As of this writing, the daughters are married and the son, Saxon, has graduated from Indiana University and gained a scholarship to begin a three-year Master of Divinity Program at Vanderbilt. Cayce and Margaret are residing in Auburn, Alabama where Dr. Scarborough is the leader of the Agricultural Education Staff at Auburn University. The address is: Adult and Vocational Department, School of Education, Auburn University, Auburn, Alabama 36830. ◆◆◆

**BOOK
REVIEWS**

APPLIED ECONOMICS: RESOURCE ALLOCATION IN RURAL AMERICA, by Rueben C. Buse and Daniel W. Bromley. Ames, Iowa: Iowa State University Press, 1975, 623 pp. \$19.50.

This book deals with the application of economic principles to resource allocation problems with special emphasis on rural America. It is divided into three parts and contains 15 chapters. Part I presents an overview of different economic systems, economic analysis, and of some issues of resource allocation. Part II provides an introduction to microeconomic theory and deals with regional specialization and trade,

production economics, cost curves, supply curves, consumer demand, market equilibrium, and market structure and resource allocation. Part III includes a more detailed treatment of the economic issues of the production of food and fiber, the agribusiness sector, human resources and rural poverty, the rural community, and natural resource use. A few brief references are made to the vocational agriculture program and there seems to be an inference that students are being trained only to enter farming, rather than for employment in the total industry of agriculture.

The authors of the book have an extensive background in applied economics. Dr. Buse is Professor, Department of Agricultural Economics, University of Wisconsin, Madison. His general research interests are in consumer behavior, research methods, and computer-assisted instruction. Dr. Bromley is Associate Professor, Department of Agricultural Economics, and Director of the Center for Resource Policy Studies and Programs, University of Wisconsin, Madison. He has published numerous papers on public decision making in the natural resource area and in the general area of rural development, and he is coeditor of *Land Economics*.

This book is intended primarily for use as a text for the beginning student of economics at the college or university level. It will provide a very comprehensive and well-written reference for teachers and students who are interested in the topic of applied economics with a rural emphasis.

J. Dale Oliver
Virginia Polytechnic Institute
and State University
Blacksburg, Virginia

PROTEIN AND NUTRITION POLICY IN LOW-INCOME COUNTRIES, by Francis Aylward and Mogens Jul. New York: Halsted Press, A Division of John Wiley and Sons, Inc., 1975, 150 pp. \$6.95.

There is an impressive foreword by Nevin Scrimshaw, a revealing acknowledgements page, a helpful terminology page, and a fine introduction which sets the stage for the information to follow. There are two main parts to the book. Part I, Proteins, Protein Deficiencies and the Sources of Food Proteins, has the following main headings: The Nutritional Background, Protein Needs of Low-Income Countries, Protein Supplies and Protein Consumption, Protein Sources — Agricultural and Other Systems, Protein Foods, and Protein Foods in Low-Income Countries. Part II, Lines of Action, includes: National Food and Nutrition Policies, Action within Low-Income Countries, The Contribution of Industrialized Countries, and The Contribution of the United Nations' Agencies, National Technical Assistance Agencies, International Foundations and Voluntary Bodies. There are two appendices of interest and an extensive bibliography. An index adds to the value of the publication.

Each of the authors has served on the staff of the Food and Agriculture Organization of the United Nations, and as officers or consultants of other UN groups. Over the past fifteen years they have lived in, or traveled in, a number of low-income countries, so they have had recent, significant

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experiences which relate directly to the content of the book. Dr. Francis Aylward is Professor of Food Science at the University of Reading, England. Dr. Mogens Jul is a leading figure in the food industry in Denmark.

This book has been written primarily for non-specialists who have responsibility for food and nutrition programs. It is intended to be of use in both industrialized and low-income countries to industrialists, government officials, educators, scientists, and all others concerned with food and nutrition policies. Given the great current interest in world food problems, and the impressive amount of clear, accurate, up-to-date in-

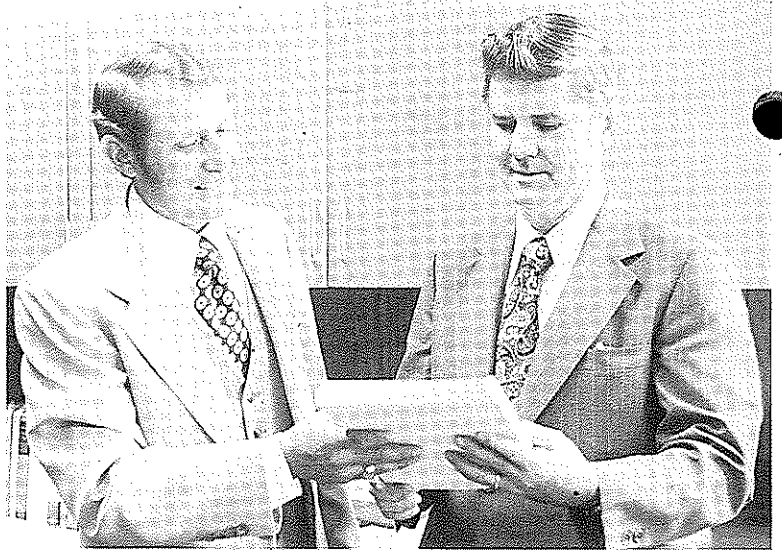
formation in this book, it should be a useful reference at senior high school, community college, senior college, graduate, and post-graduate levels. It is not too difficult to imagine a new, innovative course at any of the levels mentioned where this book would either be one of the texts utilized, or where it would be required supplementary reading. The well-informed citizen of today would benefit from reading and thinking about the ideas and facts presented so concisely and yet so capably.

Benton K. Bristol
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IN PICTURES

STORIES

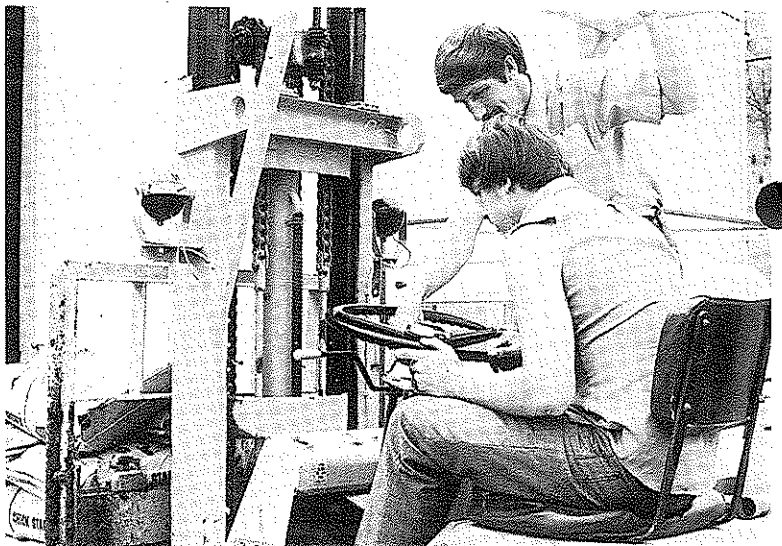
by
Jasper
S.
Lee



NEW PRESIDENT VISITS DEPARTMENT — James D. McComas (right), new President of Mississippi State University, is shown being presented a bound volume of syllabi for all departmental course offerings by John W. Oren, Head, Department of Agricultural and Extension Education, Mississippi State University. President McComas, a former agriculture teacher and teacher educator and college dean, received the syllabi during a recent visit to the Department. (Photo by Jasper S. Lee, Mississippi)



AWARD FOR EXCELLENCE IN TEACHING — Wilbur Ball (right), Professor of International Agriculture and Agricultural Education at California State University is shown receiving the Salso-Noren Award for Excellence in Teaching from O. S. Burger, Dean, School of Agricultural Sciences. (Photo from California State University.)



INSTRUCTION IN OPERATION OF FORK LIFT — James Wells (standing), agriculture teacher at Rogersville, Tennessee, is instructing student David Kirkpatrick in the operation of a fork lift truck as part of a supervised agricultural experience program. (Photo from Tennessee Department of Education)

IN-SERVICE TRAINING FOR TEACHERS — G. G. Powell (left), Mississippi District Supervisor, and Robert Burke (second from left), District Forester with Georgia-Pacific Corp., are shown demonstrating a method of measuring tree diameter to two vocational agriculture teachers, Ned Riddell (second from right) and Emmett Williams (right). (Photo from Jimmy McCully, Mississippi)

