Stories in Pictures
by Richard Douglass

LEARN NEW SKILLS [Photo from J. C. Sisson, Area Supervisor, Louisiana]
<table>
<thead>
<tr>
<th>TABLE OF CONTENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>THOME — CAREER EDUCATION: UNIQUE INSTRUCTIONAL METHODS</td>
</tr>
<tr>
<td>ROY D. DILLON, Editor, University of Nebraska... ...</td>
</tr>
<tr>
<td>HARLAN R. RIDINDGOU, Business Manager, The AGRICULTURAL EDUCATION MAGAZINE, Columbus, Ohio 43210</td>
</tr>
<tr>
<td>J. ROBERT WARMUND, Consulting Editor, The Ohio State University, Columbus, Ohio 43210</td>
</tr>
<tr>
<td>NORTH ATLANTIC REGION</td>
</tr>
<tr>
<td>SOUTH REGION</td>
</tr>
<tr>
<td>DAVID M. BROWN, University of Minnesota, St. Paul</td>
</tr>
<tr>
<td>BOB R. STEWART, University of Missouri, Columbia</td>
</tr>
<tr>
<td>ROBERT W. FOSTER, Louisiana State University, Baton Rouge, LA 70803</td>
</tr>
<tr>
<td>WILLIAM T. HALL, North Carolina A &amp; T State University, Greensboro, NC 27411</td>
</tr>
<tr>
<td>PACIFIC REGION</td>
</tr>
<tr>
<td>DWIGHT L. KIDSCY, University of Idaho, Moscow, ID 83844</td>
</tr>
<tr>
<td>Book Reviews</td>
</tr>
<tr>
<td>JAMES P. KEE, Oklahoma State University, Stillwater, OK 74078</td>
</tr>
<tr>
<td>SVATA</td>
</tr>
<tr>
<td>RESEARCH</td>
</tr>
<tr>
<td>DAVID McCACKEN, The Ohio State Univer- society, Columbus, OH 43210</td>
</tr>
<tr>
<td>HISTORICAL</td>
</tr>
<tr>
<td>C. O. LORIN, Washington University, Pullman, WA 99163</td>
</tr>
<tr>
<td>COVERAGE PHOTO</td>
</tr>
<tr>
<td>Guest Editorial... THE PLETHORA OF TEACHING METHODS AND MATERIALS</td>
</tr>
</tbody>
</table>

Wayne Staley
Teacher of Agriculture
Centreville, Pennsylvania

This issue of the AGRICULTURAL EDUCATION MAGAZINE, INC., which is published at the First Street, Ne., Athens, Ohio, 45701. SUBSCRIPTION PRICE: $1 per year. Foreign subscriptions $8. Student subscriptions $1, and special rates are available. Managing Editor, The Agricultural Education Magazine, Inc., Box 2493, Columbus, Ohio, 43210. Second-class postage paid at Athens, Ohio. Published weekly and mailed to the Student Councils and in the faculty in the appropriate Special Edition.

From Your Editor... IS YOUR PRESENT NEED FOR NEW PROCEDURES, OR NEW INSTRUCTIONAL MATERIALS?

The beginning teacher of agriculture has somewhat different needs than the experienced teacher, as they relate to teaching methods and instructional materials. The teacher starting in the field has a new challenge and a new environment to deal with. He, however, has two assets the beginning teacher does not have: (1) a teaching experience base that should provide meaningful insights into how to work with all types of students, and (2) a knowledge of sources of instructional resources both in and outside of the community. Actually, the problem is probably one of selection from rather than identification of, for the experienced teacher.

The experienced teacher should pursue the identification of the new teaching and program planning practices which may be helpful in upgrading his instruction, and of procedures for selecting and evaluating instructional materials from the sources he has identified.

Curriculum laboratories are being developed in several states across the U.S., which will provide new resources for making the materials available to agriculture teachers. These laboratories are being designed with career education and the individual student in mind.—RDU

The problem today is not preparation of teaching methods and materials, but the intelligent "selection" of effective methods and appropriate materials for each learning situation...
AUDITO-TUTORIAL INSTRUCTION IN SMALL GASOLINE ENGINES

Allan D. Petersen
Agricultural Mechanics Instructor
Dillon County Area Vocational Center
Dillon, South Carolina

Thomas A. Hoerner
Agricultural Engineering & Agricultural Education Departments
Iowa State University, Ames

The recent rapid expansion in the use of audio-tutorial materials and equipment in education has resulted in the development of a national interest in the effectiveness of the audio-tutorial method. A common educator's goal is to improve the quality of instruction in the educational process. In some studies the audio-tutorial approach to individualized instruction has increased the learning ability of students; whereas, in other cases it has shown no particular advantages. However, most educators would agree that we are still really only on the threshold of developments in audio-tutorial methods, and much research and investigation are necessary before we can fairly and accurately evaluate the value of various methods and techniques.

Based on these assumptions this investigation was conducted to evaluate the effectiveness of the audio-tutorial technique of instruction in a small gasoline engine course at Iowa State University. The audio-tutorial technique used was sequence-programmed lessons using an automatically synchronized 35 mm slide tape machine. Basically the technique was compared to the traditional lecture-laboratory type instruction.

The course selected to study the effect of audio-tutorial instruction versus traditional methods was an introductory course in agricultural engineering on small gasoline engines. This is a course in small power that is simply developed to provide instruction in theory, principles and procedures of small gasoline engine and associated power equipment. A common segment of the course pertaining to the magneto and battery ignition phase of the course was chosen to conduct the experiment. The one-week segment included two lecture periods and one hour-laboratory period.

The population consisted of 28 students, primarily men and seniors, enrolled in the College of Agriculture. The following questions were posed to determine the effectiveness of the audio-tutorial method:

1. Can subject matter (lecture material) in small gasoline engines be effectively developed utilizing the audio-tutorial method? (2) Can subject matter and procedures in small gasoline engines which utilize the audio-tutorial method of teaching in the laboratory be effectively developed? (3) Can selected factors which increase the effectiveness of the audio-tutorial method of instruction be identified? and (4) Is there a significant relationship between the attitudes of students using the audio-tutorial method and their pretest-posttest difference?

Design of the Experiment

Two audio-tutorial sequence-programmed lessons on subject matter principles and theory were developed to match the two lecture topics given by the regular instructor to students in previous quarters and to the control group during the study. A third audio-tutorial lesson was used to match the regular laboratory procedure of disassembling, testing and assembling the ignition system of the small gasoline engine.

The audio-tutorial lessons consisted of a prepared and sequenced script recorded on 2-track cartridge magnetic tapes and 35 mm color slides containing diagrams, pictures, drawings, actual photos and typed written key phrases from the audio script. After the tape was recorded and the slides prepared, the teaching machine was programmed to automatically advance the 35 mm slide tray by introducing electronic pulses on the second track of the audio tape. Individual study cards, each containing a slide tape player with headphones and a small projection screen, were set up. A study carrel with the audio-tutorial equipment provided for the student.

In addition to the materials and equipment, the student had a one-page skill sheet for use during the laboratories. This skill sheet was given as the tape and slides while completing the operations of disassembly and assembly of the ignition system on the actual engine. As noted, the skill sheet included: part identification, operational procedure, abilities and understandings taught, materials needed and an evaluation score sheet. Approximately 20 of these skill sheets were used throughout the total small engine course. The skill sheet was also used by the control group during the laboratory portion of the investigation.

The following is the audio-tutorial program length and slide quantity for each of the three lessons:

<table>
<thead>
<tr>
<th>Time in Quantity</th>
<th>Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minutes of Slide</td>
<td></td>
</tr>
<tr>
<td>1. Magneto ignition systems</td>
<td>54</td>
</tr>
<tr>
<td>2. Battery ignition systems</td>
<td>47</td>
</tr>
<tr>
<td>3. Ignition system assembly</td>
<td>17</td>
</tr>
</tbody>
</table>

Four tests were administered to the students including a mechanical aptitude test, pretest, posttest and laboratory test in that order. The pretest, posttest and laboratory test used in the experiment were developed by the author in

(Concluded on page 22)
BRING CHunks OF REALITY INTO THE CLASSROOM

Ronald W. Heiner
Instructor
Parkland College
Champaign, Illinois

David L. Williams
Associate Professor
University of Illinois
Division of Agricultural Education
Urbana, Illinois

A FARM MANAGEMENT GAME FOR HIGH SCHOOL STUDENTS
Or Have Fun and Learn At The Same Time

Donald D. Osburn
Professor
University of Missouri, Columbia

Donald D. Osburn
Associate Professor
University of Missouri, Columbia

Time Moves On

Almost a decade ago the objectives for vocational education in agriculture were changed to reflect the changing agricultural industry. Contemporary agriculture is faced with many agronomic pressures and many new technologies have forced farmers to become more specialized and form larger units. Fewer farmers are required, but men and women with agricultural competencies are needed in increasing numbers to service a growing total industry. Many of these students enrolled in agricultural education programs intend to enter an off-farm agricultural occupation.

Simulation provides the stage for role playing several kinds of experiences.

Can teachers of agriculture still teach students something practical? Can the problem-solving approach still be used? The answer is yes. But when preparing students for off-farm agricultural occupations, it is necessary for the student to identify with an occupation just as a student who plans to farm identifies with the occupation of farming. The student must understand the job of a farmer and identify with the occupation before he can appreciate the importance of solving a farmer salesman's problems.

Old Tricks of the Trade

Simulation has been used for years to teach approved farming practices. It is now being used by some teachers of agriculture at both the high school and community college levels to teach business competencies. An agronomic environment can be simulated within the classroom or laboratory so that the instructor can formulate learning experiences that will help the student develop knowledge and skills needed in agronomic occupations.

Getting Started

The next step. A display of agricultural products provides a suitable setting for teaching marketing agricultural competencies at school.

Agricultural Marketing provides many opportunities for students who want to pursue a career in agricultural marketing. However, the field of marketing is not limited to agriculture. Marketing is the process of planning, implementing, and controlling the marketing mix to achieve a desired level of customer satisfaction. Customer satisfaction is influenced by various factors, including product quality, price, service, and communication. Marketing professionals aim to create and manage demand for their products or services through effective marketing strategies. Marketing is a crucial aspect of business operations, as it helps organizations understand and meet the needs of their customers. Marketing is not just about selling products; it's about creating value for customers and building relationships with them. In today's dynamic business environment, marketing plays a vital role in competitive advantage and growth.

Time Dynamics

The game situation is developed to simulate six years. The player must operate at a level that allows him to manage his endowment and at the same time, to maximize his profits. The player must make decisions about cropping, marketing, and investing. The decisions made by the player in the first year will have a significant impact on the remaining years.

The purpose is to help students learn economic principles by manipulation.

The Missouri Farm Management Game is a simulation of the farm management process. It is designed to help students understand the economics of farm management and the implications of economic decisions. The game is intended to provide a hands-on experience that allows students to apply economic principles to real-world situations. The game is designed to be used by educators and students to enhance their understanding of farm management and economics.
TIME STUDIES AND EQUIPMENT DATA CARDS IN TEACHING TURF MANAGEMENT

TIME STUDIES AND EQUIPMENT DATA CARDS can be compiled for each piece of equipment the student is introduced to. (Table 1) The back side of the card provides space to record the maintenance procedures performed. This will provide training in the record keeping necessary to maintain equipment. The time recorded may be useful for other applications. The time may be used to set up the work load or for student evaluation. For example, give the students an area to compute the square feet of and refer to their time that they have taken to perform various turf maintenance procedures. This information can be recorded on a "Summary Estimate Sheet" and used to teach estimating for grade man or large area construction contracts. Time studies provide a basis for determining what amount of time a student can spend on their studies in the business world.

Conclusions and Recommendations for Other Instructional Areas

The use of time studies, equipment data cards, and estimate sheets that measure the time spent on the various maintenance procedures is commendable. The time recorded may be used to set up the work load or for student evaluation. For example, give the students an area to compute the square feet of and refer to their time that they have taken to perform various turf maintenance procedures. This information can be recorded on a "Summary Estimate Sheet" and used to teach estimating for grade man or large area construction contracts. Time studies provide a basis for determining what amount of time a student can spend on their studies in the business world.

What Can You Expect

Objective: The Missouri Game does not incorporate any equipment study. Opportunities for using the game to show how decision making and analysis can be performed are not available. Previous use of a similar farm management game has shown that learning what takes place as the game session goes on is approximately as effective as classroom lecture. However, use of a game plus lecture gave a higher level of learning measured by reliable subject-matter and decision analysis tests than either gaming or lecture alone.

Students develop a broader appreciation of price variability and the logic in the pricing of various grade sizes with a game than with regular classroom methods. The concept of "normal" pricing and insurance at different grade sizes in basic markets are more meaningful when studied in detail.

The task analysis procedure required that written objectives be written and submitted by the student to understand the standard of performance expected.

The student is conflicting with the time required to accomplish tasks within the specified time.

The instructional packages were to determine what tasks existed which a student person should be expected to master to achieve training for entry level positions in horticulture. Upon completion, the student should be capable of entering the fields of the Horticulture industry and know what is all about.

The first step in the development of the individualized learning packages was to determine what tasks existed which a student person should be expected to master to achieve training for entry level positions in horticulture. Upon completion, the student should be capable of entering the fields of the Horticulture industry and know what is all about.

Next, I took each Task Analysis Form and analyzed the steps. Based on the time I wrote a Terminal Performance Objective for each task. In the TPO I described the performance I expected the student to be capable of doing when completed with the task. These TPO’s were written in active verb form. An example of a TPO in the greenhouse area is: ‘Given an assignment of pots and soil, pots, seedlings, water, and space, you will correctly pot 100 plants of varied species within 3.5 hours using a minimum of equipment’. I had to describe the student the standard of performance he was expected to achieve to complete. Each TPO could have several subtasks, called called Micro Performance Objectives (MPO’s) were also written action verb form. An example MPO for the potting task: ‘Given a pot, soil and seedling, I could write according to your readings, the necessary time to complete’. Now I had a TPO and several MPO’s for each of the 275 tasks. I then made a check list to see that each MPO’s listed covered each task called for in the task analysis form. I was surprised because I decided on the steps each step would follow in actually performing the tasks. Because of my experience in teaching, I was aware that there are several tasks and list them on paper. There were, however, several areas in which I felt competent. I again turned to the professionals for assistance.
STUDENTS PUT CLASSROOM KNOWLEDGE 
TO WORK IN PROJECT HOUSE

Roger Ross
Agicultural Occupations Instructor
Lincoln-Way Community High School
New Lenox, Illinois

Lincoln-Way High School Agriculture courses have always tried to give the students the most practical, hands-on program possible in the class. In the past, this included instruction in the classroom and then doing what was learned in the Agriculture Shop. The Agriculture Classes are now getting actual experience working on the Project House.

This is the second year that Lincoln-Way High School has built a Project House with the cooperative effort of the Industrial Arts Department, Home Ec Deans, and the Agriculture Department. Each department applies its classroom learning to the Project House. The Building Classes do the construction, roofing, siding, plumbing, insulation, drywall, and outside painting. The Home Economics Class selects the color scheme, plants, and cabinet styles. The Agriculture Economics Class states the economics of the project, and paints the interior. The Agriculture Electricity Class and the Landscaping Class do the electrical wiring and landscaping. Once the rough shell of the Project House is up, the Agriculture Electric Class of twenty students goes to work installing the service entrance box, outlets, and lights in the wires for the circuits. After the Project House has been insulated and glassed, and the landscaping is complete, the students are ready to return to the Project House to finish the installation of duplex receptacles, light switches, and outlet boxes. The computer also guides the test. If the student should fail the test, the student is required to go back the winter months, each draw to relearn the materials to be made, select the course of study, and complete the plant material list, and determine the amount of soil necessary to soil (see the back of this page). The student material list is a cost estimate of plant material and labor cost.

Occasional trips to the Project House are necessary for site analysis prior to the actual landscaping of the Project House. Students work in various groups that get involved with taking and testing soil samples, determining slope and drainage, evaluating soil percolation, mapping out the location of septic tile and wells, and observing trees that may be created from windows.

In May the Landscaping Class goes to work planting the trees and shrubs at the Project House. The shrubs, shade trees, and flowering shrubs are planted after watering, timing, and fertilizing the soil. A bed is laid out in the front yard to give the Project House a more formal look. The back yard is needed to keep down the weeds and give the horticulture students broader experience.

The landscaping is finished on the Project House, but still more is learned in caring for the plants. Proper watering is critical to the newly transplanted trees and shrubs particularly the seeded lawn. Larger shade trees are supported with guy wires and insect problems may have to be resolved.

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Heimer & Wairrams — From page 6

Agricultural Occupations students and teacher plan and install the electrical wiring in the Project House.

Broader experiences are achieved on the Project House which increases student competencies to a much higher level than class room exercises. The students must perform at a level where the end product is functional and appealing to the public. At the end of the school year, the Project House is sold to the highest bidder.

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Conclusions

Preparing students for off-farm agricultural occupations can be just as exciting and rewarding as teaching students in the classroom. Agricultural occupations educators need knowledge and skills. Indeed, these skills are basic and should be over emphasized in the classroom. However, in order to motivate and challenge today's student of agriculture, new teaching techniques must be developed. Preparation for off-farm agricultural occupations must be closely correlated with the real agricultural work. Students in agricultural programs desire practical learning experiences, experiences that provide a real application to their future career.

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Innovative Instructional Materials for Vocational Agriculture...
THE EFFECTIVE USE OF AAVIM RESOURCE MATERIALS IN CAREER EDUCATION

Howard Turner
Assistant Professor for Instructional Materials
Atlanta, Georgia

The proper use of resource materials can make the difference in a good teaching job or a poor one. The number of references may not be important. Teachers do not have the time to look up all the available information on a subject in the development of a lesson plan. Few texts and references are complete in themselves.

The aim of this discussion is to give some hints as to how you can use the material resource developed by AAVIM more effectively. AAVIM is an acronym for Agricultural and Vocational Information Management. AAVIM promotes the growth and application of technology in agriculture and the food production and distribution system.

The student should know the difference between a research and an interpretive paper. The research paper is based on original data and the interpretive paper is based on secondary data. The research paper is more difficult to write and is more valuable to the student.

The subject of small engines is taken for an analytical discussion. Two small engines are available from AAVIM. They are SMALL ENGINES, VOLUME I, SMALL ENGINES, VOLUME II. The first volume deals with the care and operation of small engines. The second volume deals with small engines, regardless of the background of the student.

Volume II deals with maintenance and repair. The student who studies Volume II is expected to be able to service the engine and accessories and replace broken or worn parts. The student may be an entrepreneur in small engine repair. The student may be an employee of a small engine repair shop.

In the Table of Contents of Volume II, the student is expected to be able to service the engine and accessories and replace broken or worn parts. The student may be an entrepreneur in small engine repair. The student may be an employee of a small engine repair shop.

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FULL QUARTER INTERNSHIP IMPORTANT IN UMW PROGRAM

Tom Yuvar
Supervisor, University Relations
University of Minnesota Technical College—Waseca

Preoccupational Preparation Program is quite a mouthful, even for a college student, and it is one of the reasons the nickname POP Program has come to the fore at the University of Minnesota—Waseca.

But call it what you will, the Preoccupational Preparation Program is a unique and most valuable part of the curriculum at UMW. Each student who pursues a degree program in this new technical collegiate program at the University of Minnesota—Waseca is required to complete the POP requirement for the Associate in Applied Science degree.

Seven quarters or 106 credits are required for graduation. Twelve of these credits are earned on POP. POP is a full quarter or twelve weeks of on-the-job internship experience in his or her chosen major of family of occupations. At least two quarters of resident instruction are required before a UMW student goes out on POP. Hence, the intern experience does not come until the fourth, fifth or sixth quarter.

Depending on who you talk to at the University of Minnesota—Waseca, the response to the value of POP will vary. But only in degrees of how important it is, Peter Fog, coordinator of the Program, sees it one way. Harriett Haslen, chairman of the academic discipline committee has developed a new and original approach to solving many of the problems dealing with career choice faced by students and educators alike. The following represents the effect of the program on the student it has been instituted at Mayer High School.

"Mr. Miller," said Fred, "my career test shows that I am interested in medicine. Think I'll be a veterinarian or, at least be in some field related to it."

"Well, Fred," replied the teacher, "you could go to the library and try to find some information on veterinary medicine. Of course, our library is small and information on any given career is limited. I suppose you could go to Proctor and ask a veterinarian about the career—but that is, if he can find time in his busy schedule to see you. Then again, we could write to the University of Arizona, for they have a pre-veterinary program."

The student agreed and called Fred, "I have to go to a lot of trouble to find out about that career. I guess I'll start tomorrow."

How many times has a student come to you and asked for immediate career guidance, and you either did not know where to look, or the student was lost due to lack of immediate feedback? As an educator, I have been frustrated many times by my inability to help a student identify options and alternatives that would meet his needs. Our Waseca County Career Education project is going a long way toward solving my and the student's problems.

The program branches into three major areas:

1. Computerized guidance information
2. Employment Data
3. Personalized hands-on experience and programmed instruction.

About 45% of the student body, determined by school counseling, will participate in the computerized guidance information. About 15% will participate in the hands-on experience and programmed instruction. About 40% will participate in the Employment Data.

The effect is not yet real for some perspective students.

The program is flexible enough to be expanded and contracted to meet the needs of any particular student.

Tom Yuvar
Supervisor, University Relations
University of Minnesota Technical College—Waseca

PRACTICAL APPROACH: Each student at the University of Minnesota—Waseca has an opportunity to participate in a full quarter of practical experience while studying at the College. We have been able to offer this valuable laboratory experience in our course offerings, he said, "because we feel that the practical experience and knowledge is so important in technical education.

Fred Miller, Vocational Agriculture Teacher
Mayer Public Schools
Mayer, Minnesota

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Fred Miller, Vocational Agriculture Teacher
Mayer Public Schools
Mayer, Minnesota

Labels, in and of themselves, are meaningless to the student. Unless the concepts underlying a particular label are understood, then the label serves no purpose. The Career Exploration label is no exception, and it is not the career counselor who must teach the student the meaning of the label, but the student himself. Therefore, we have developed a new program entitled "Career Exploration," which is designed to help the student understand the meaning of the Career Exploration label. This program consists of several modules, each of which focuses on a specific aspect of Career Exploration, such as "What is Career Exploration," "Why Career Exploration," and "How Career Exploration is Used." Each student is required to complete all modules in order to receive credit for the Career Exploration course.

The program is designed to be flexible, allowing students to progress at their own pace and covering a wide range of career exploration topics. It is hoped that by the end of the course, students will have a comprehensive understanding of Career Exploration and will be better equipped to make informed decisions about their career paths and educational goals.
TEACHING OCCUPATIONAL OBJECTIVES IN VOCATIONAL AGRICULTURE

JULY, 1971

BOOK REVIEWS

A SELECTED LIST OF EDUCATIONAL MATERIAL AVAILABLE FROM COMMERCE AND INDUSTRY


This hand-selected book is available prepared from International Materials Services, Inc., 795 Walt Whitman Road, Melville, L.I., N.Y. 11747.

This list is particularly helpful for those interested in the use of industrial and commercial materials in education. The list is well-organized and covers a wide range of subjects, from agriculture and forestry to business and finance.

ADULT EDUCATION IN AGRICULTURAL CULTURE by Ralph M. Frederick, Assistant Professor, College of Agriculture, Ohio State University, Columbus, Ohio: Morrill Publishing Company, 1972, 225 Pages; Price unknown.

This book is designed for use in adult education programs, particularly those focused on agricultural topics. It provides a comprehensive overview of the field and is a valuable resource for educators and students alike.

Harry E. Frank
Assistant Professor
Vocational and Adult Education
BUILD A TEACHING AID TO DEMONSTRATE THE PRINCIPLES OF HYDRAULICS

Keith W. Hatch
Instructor, Agricultural Education
Utah State University

If you have tried teaching the principles of hydraulics to high school students, you are likely aware that it is not easy. How can we effectively convey to these inexperienced students the complex ideas involved in the relationships between temperature, oil pump speed, oil pressure and oil flow in the hydraulic system? The fact that the teaching problem is difficult doesn’t make it any less important. The increasing use of hydraulic systems in farm equipment and industrial machinery makes it imperative that the public also becomes increasingly aware of the need for individuals trained to service the automatic and precision engineering techniques needed to service the systems.

One such technique has been developed in the Agricultural Education Department at Utah State University. It involved the construction of an apparatus that utilizes both the student’s sense of curiosity and the student’s interest in enhancing his comprehension of the effect of temperature, pump speed and oil pressure in relationship to the amount of oil displaced from the hydraulic pump. We are proposing that similar devices be made available to high school students.

We designed the apparatus with 11th and 12th grade student in mind. Considering their limited background, we constructed it so that they could readily see the driving mechanism and the oil movement. This would help them understand the hydraulic pump, the oil movement and how these affect the work being accomplished.

We designed it to be simple and relatively inexpensive; quiet enough to be discussed in a classroom; small enough for a single light and compact enough for one person to handle and move; it is able to vary the hydraulic pump speed; able to develop enough pressure, flow, heat and speed that a relationship may be shown in different ways and easily and possibly to easily install a flow meter to make the measurements indicated. Energy, gravity, friction, air, etc. are used to construct a device such as ours for demonstrating the relationships in applied hydraulics, you will need the following:

A positive displacement pump: For simplification, a small self-contained reservoir will permit the rapid heat buildup necessary in the test. An adjustable relief valve built into the reservoir to allow air bubbles to escape. It should be rated high enough in weight to enable an individual to handle the apparatus. We used a 220 psi, 3 gpm, 15 hp, hydraulic motor.

The variable speed control lever returned to the maximum drive speed position and the restriction valve adjusted to a pressure reading of 35 psi, again read and record the gpm per minute flow, speed and temperature.

Then adjust the restriction valve to a pressure reading of 450 psi and record the readings as shown on the flow meter.

Test #3. This step takes into account the effect temperature may have on pump output. Record the information from Test #1, run #1 as #1 at 35 psi. For run #2 adjust the oil temperature to the minimum temperature that will hold oil in its liquid state. Then adjust the variable speed control to get the same speed as in run #1 at Test #1 with the pressure adjusted to 500 psi. Record data as indicated on the flow meter.

Honeycomb Evaluation

The honeycomb required by the electric motor can be determined by taking the impeller and voltage required to operate the hydraulic system at 300 p.s.i. and the amount of oil flowing at this time. To eliminate the complexities of calculations, a 40 percent conversion loss through the electric motor and drive can be assumed.

Assume 60 percent of the horsepower required by the electric motor being input horsepower to the hydraulic pump, calculate the output horsepower with the formula:

\[
\text{Hydraulic Horsepower} = \text{gpm} \times \text{psi} 
\]

The hydraulic pump efficiency can then be calculated by the formula:

\[
\text{Efficiency} = \frac{\text{Input Horsepower}}{\text{Output Horsepower}} \times 100 
\]

From the results of Test #1, the students will readily see that the speed the hydraulic pump is driven effects greatly the gallons per minute delivery of the hydraulic pump. The relationship is derived by comparison of the gallons per minute speed at the two speeds. The relationship is quite apparent primarily upon the operator's adjustment, the degree of accuracy of the speed and the elimination of belt slippage.

It is properly constructed, you will find it to be as reliable as a small group of 10 to 15 students. We feel this apparatus is well suited to the demonstration of the principles of hydraulics essential in today's mechanized world.

Editor's Note: Interested persons should consult for further data sheets and for further specifications.

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One of the most profound qualifications of a successful teacher of the disadvantaged rests with the qualification of the teacher's attitude. Their attitudes must project an acceptance of all students, a caring for the students, the ability to work with the students in a strong, positive manner. They must be able to identify the particular strengths that the disadvantaged possess. Usually, only the weak qualifications are identified. Teachers must adapt their teaching techniques so that the students will be given the opportunity to utilize their strengths to remove their weaknesses. Certain characteristics must be present and the ability to work with the students in a strong, positive manner. They must be able to identify the particular strengths that the disadvantaged possess. Usually, only the weak qualifications are identified. Teachers must adapt their teaching techniques so that the students will be given the opportunity to utilize their strengths to remove their weaknesses.

(Continued on top next page)
Stories in Pictures

by Richard Douglas

Theme—CAREER EDUCATION: Being More Effective