

them immediately for the labor force. What type of programs do they need? What should they know? Who will hire them? These questions and many others must be asked to determine the role of agriculture in the Community College.

The successful community college teacher must become aware of the opportunities available in the community served by the college. This awareness can best be satisfied by conducting an occupational survey to determine competencies needed by prospective employees throughout the community. With this information as a basis, the teacher can then develop objectives and goals for accomplishment in the preparation of employees to enter the work force with a saleable skill as a technician in an Agricultural Occupation.

As an integral part of this developed program of preparation, the teacher should involve other qualified persons to help complete the teaching-learning process. This can be done partly by work experience programs but more effectively by Cooperative Education Programs whereby instruction in the classroom is related to on-the-job training provided by Agriculture Industry. This type of program is in a sense team-teaching. The theory and basic principles are taught in the classroom under the direction of a trained educator schooled in the techniques of presenting material in a logical sequence that can be understood and related to practical

experiences. On the other hand, the on-the-job training is supervised by disciplined personnel that can develop in the student the competencies necessary for him to gain and hold a position in which he can produce a service or commodity demanded by the public. Such a background will enable him to advance on the job as he applies his skills and develops new ones.

The role of an Agricultural Department is to provide the information and knowledge required by those preparing to enter the job force. This is done by developing a core curriculum of science, math, communication and social and behavioral science that can be supplemented by individualized programs in agriculture determined by the interest of the student. To develop these individualized programs, the teacher must determine what needs to be taught and apply suitable methods to adequately teach it.

Since the Community College is not held by traditions, it can innovate and develop needed programs. The course titles in these programs are the same as those taught in four year institutions, but are not necessarily taught at the same level or for the same goals. They are designed primarily to meet the needs of the student for preparation as a Technician in Agriculture.

## Challenging the Junior College Student With Applied Research Problems

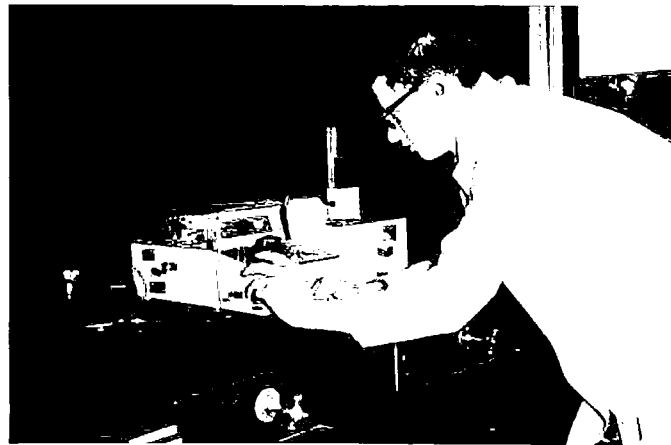
Fred B. Hicks

For the past several years, the Dairy & Food Science department of the State University of New York, Agricultural and Technical College at Canton has included in the curriculum an elective course for seniors that has proven most successful in motivating the student. They choose a problem of applied research that is related to their major, the milk and food industry. The problem is carried on during the senior year. It has been found that the course has been most rewarding to the students and has done much toward stimulating them to make use of the classroom and laboratory training received in other courses.

Choice of a problem is made at the beginning of the senior year. Problems are not assigned. Each individual must have his or her own selection of subject. Those unable to make their own selection are not allowed to take the course. We have found that in most cases the choice is one of particular interest to the individual. The research requires extensive library reading as well as laboratory or field experience. At the conclusion of the problem, the student must submit a written report of the work done including all experimental data.

Faculty members serve only as advisors. Once a week the instructor meets with the student informally to discuss any difficulties that may have arisen and to help the individual in the procurement of the equipment or supplies needed to carry on the project. No formal classes or laboratory time is set aside in the schedule for this course. The student arranges his own time which occasionally involves evenings and weekends. Periodically, the group meets to exchange information about their research. It is interesting to note that despite the fact that only one credit hour is assigned to the course, students are willing to spend three or four times as much work in this course as they would in formal courses offering similar credit.

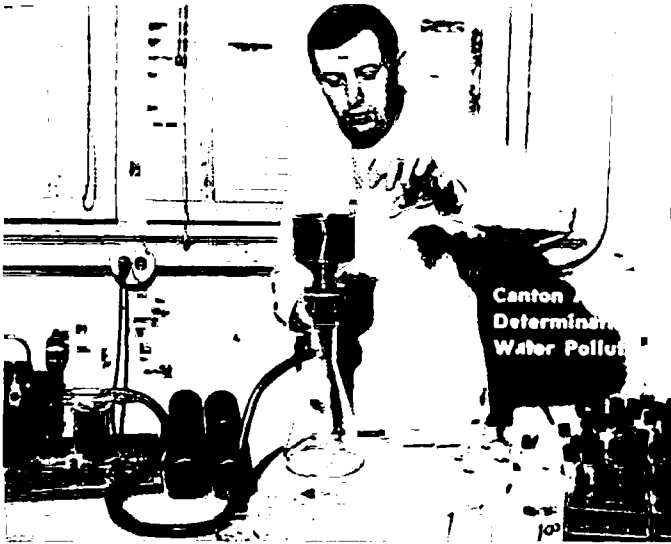
The Dairy and Food Science problem course has been favorably accepted by students, based on their evaluation. We believe that this approach has gone a long way toward motivating the students to independent thinking and organization of their work. Although no spectacular discoveries have been made as a result of this research, the scientific approach in attacking the problem, and the amount



A senior using the Cryoscope in determination of the average freezing point of milk.

of individual effort and enthusiasm devoted to the course has proven to us the value of student centered learning outside the confines of the usual classroom and laboratory experiments.

Many interesting and worthwhile applied research topics have been chosen over the years that this course has been offered. In most cases, the problems were of current interest to the Dairy and Food Industry. The accompanying photographs are of two of our students at work on their problems. One photograph is of a senior using the Cryoscope in determination of the average freezing point of milk produced in this area. An additional part of this research was the correlation of butterfat content and freezing point. At the time of this project, there was much experimental work being done by other colleges in the use of the Cryoscope in the detection of adulterated milk. *The other photograph* shows a student testing water supplies for pollution by the so-called Membrane-Filter technique. The objective of his problem was a comparison of this method with the standard fermentation



A student testing water supplies for pollution by the so-called Membrane-Filter Technique.

procedure. There was much similar work being done at this time in other institutions on the use of this method.

Other recent problems that have been selected by our students are:

1. Effectiveness of various udder sanitizers on the inhibition of mastitis causing microorganisms.
2. Rancidity of milk caused by Pipeline methods of handling milk.
3. Studies of Residual Antibiotics in the Udder.
4. Comparison of the Foss Milko-Tester and the Babcock test for the determination of fat in milk.
5. A Study of Water Pollution sources in a nearby locality.
6. Relationship between psychophilic bacteria counts and the sediment content of producer milk.
7. Study of influence of agitation time on the fat test of farm bulk

tank milk.

8. Factors affecting the accuracy of the Whiteside test for detection of cells in milk.

9. One student selected as his project a very practical problem. He undertook to track down the causes for high bacteria counts in a nearby dairy manufacturing plant.

These are but a few of the applied research selections carried out by students. We feel that the student should not be evaluated in terms of the accomplishments of his work, although the results have frequently been gratifying. The value has been in the realization that to some extent we have been able to interest and challenge the student.

In recommending this type of course to others for adoption, we would advise that certain precautionary measures be considered.

1. Students should be advised against the selection of a problem too advanced for them. Discouragement and the defeat of the purpose of the course is the outcome, if this is not done. The more practical the research problem is the more likely will be the student's continued interest.

2. Sufficient reference material must be available for the students use. If the student finds it difficult to locate background material, his interest is apt to wane.

3. It should be emphasized at the outset of the course that the student will be evaluated in terms of the quality of the laboratory and written work done, not on any positive results that may be obtained.

4. All students regardless of their previous academic record should be allowed to elect the course. Frequently, this type of course is restricted to top level students. This is a mistake. All students professing an interest in a project or problem suitable to their level of ability should be given the chance to participate. We have found that frequently the performance of the so called poorer student has been much superior in the course than in some of the other courses he has taken.

We feel that the minor research such as has been described here is of considerable value in any technical program with a special application to the agricultural field where many practical problems are familiar to the subject. The students learn by making their own errors in judgment and derive real satisfaction by their successes.

## Report of the NACTA Teacher Evaluation and Recognition Committee

Donald J. Ayo, Nicholls State College, Thibodaux, Louisiana; J. Wayland Bennett, Texas Technical College, Lubbock, Texas; E. Grant Moody, Arizona State University, Tempe, Arizona 85281. Chairman, June 16-18, 1969, Alfred, New York.

### THE TEACHER FELLOW

#### PHILOSOPHICAL BASIS

NACTA has as one of its objectives the establishment and recognition of professional standards of teaching. The Teacher Evaluation and Recognition Committee (hereafter, the Committee) has been charged with the task of defining prerequisites and providing recognition to those who reach stipulated levels of achievement. The TEACHER FELLOW program as herein described is designed to encourage the struggle for excellence both for the natively gifted and the not quite so gifted (but dedicated) teacher while giving the poor teacher evidence to suggest that he seek other than the teaching field for livelihood and service opportunities. The TEACHER FELLOW rank is available to the teacher in small as well as large departments who looks upon meeting students in the classroom as his professional career.

An important facet of the TEACHER FELLOW program is to recognize good teaching on a national basis making it as easily capitalized as good research. On a widespread basis, teachers of agriculture in colleges should be encouraged to qualify. The policy, early established and continuing to guide the Committee has been to recognize teachers on a rather broad basis rather than choosing one or two individuals per year, and furthermore, this recognition should be based on an evaluating procedure involving more than a simple nomination by a few people, but to include evaluation by present and past students, peers and self.

Current students can improve a teacher's instructional habits by evaluating his teaching skill, mastery of subject matter and grading formulas. The alumni can best identify the good teaching that sometimes is recognized best after it has experienced a few seasons of testing; they also can provide a type of feedback that can help keep the teacher up-to-date. An evaluation by the teacher's peers is necessary because the caliber of a man's mind and work can best be judged by other trained minds in his profession. Introspection and self evaluation

helps the teacher pinpoint and accentuate those qualities that make for effective teaching.

Guidelines must be broad enough to recognize the varying contributions of teachers without saying which are the most important, i.e., one teacher can best inspire whereas the other can best inform, each being important to overall teaching. The concept of the TEACHER FELLOW must be defined on the basis of both quality and quantity in teaching. Although a minimum service time is expected, a teacher must be measured as to his effectiveness as a "learning facilitator" by the effect he has on his students and not merely by the time spent on the job.

Data submitted will be summarized and reported to the teacher to allow him to use the results of his evaluation to improve his teaching while preserving the anonymity of his evaluators.

TEACHER FELLOW awardees will receive publicity through NACTA Journal and the deans of resident instruction at the respective home institutions. Such recognition will hopefully be rewarded by salary adjustments and other means available to the institutions that benefit most directly from the teachers' talents.

Honorable mention will be extended by NACTA to those teachers who desire to benefit from these evaluation procedures and score 75 per cent but do not achieve the high standards set for the TEACHER FELLOW rank.

If a single prize is available to NACTA to give special recognition to only one eminent teacher, this stipend will go to the classroom teacher selected by the Committee based on:

1. Nomination by one or more:
  - a. Student Honor Society
  - b. Departmental chairman, dean and/or colleague (s)
  - c. Former student (s)
2. Total score achieved in the process of qualifying for TEACHER FELLOW rank.

#### TEACHER FELLOW QUALIFICATIONS

TEACHER FELLOW is to be the recognition title of NACTA for outstanding, extraordinary, distinguished and/or master classroom teachers. Qualifications include (but are not necessarily limited to) the following: