

one issued by the same institution in some previous year.

A college catalog survey also indicates that some institutions have deemed it advisable to consolidate some departments. The combining of departments of farm crops, horticulture, and soils into a department of plant and soil science is an example of such consolidation. Your speaker is of the opinion that this conception probably originated with college administrators rather than classroom teachers.

In order to increase the opportunities for individual student initiative and development, some institutions are providing for undergraduate seminars and research problems. Tennessee Tech first offered Agronomy Seminar in 1952-53, and Agronomy Problems in 1953-54.

A limited effort has been made to set standards for curricula in some areas of agriculture, including agronomy. In a paper presented to the Agronomic Education Division of the American Society of Agronomy by Dr. Henry S. Brunner (2) during the 1962 meeting, he outlined recommendations by the Committee on Educational Policy in Agriculture of the Agricultural Board in the Academy of Sciences — National Research Council. This Committee recommended as a basis for attaining the B. S. degree in Agriculture (with a major in Agricultural Science, Production, or Business) that the curriculum require 50% of the credits in general education (including General Communications, Humanities and Social Studies, Mathematics and Statistics, Physical Sciences, and Biological Sciences), the major field 20%, courses supporting to the major field 20%, and electives 10%. A more detailed report was carried in the June issue, 1964, of our NACTA Journal.

In 1963 the Soil Science Society of America received a report from its Committee on Training of Soil Scientists (1) setting standards of training required for the Society to certify B. S. degree students as soil scientists. The minimum requirements are: "(1) 12 semester hours in soils,

(2) two semester courses beyond general chemistry, (3) mathematics through trigonometry and analytical geometry, (4) two semesters of general physics, (5) botany through plant physiology, (6) one course each in geology and bacteriology, and (7) one course beyond Freshman English."

Other evidences of efforts to improve the instruction in agronomy could be cited, but time does not permit.

#### SUMMARY

I trust that so long as man shall teach he will make a diligent effort to improve the quality of his instruction and efficiency of the graduate he helps to produce.

Past President Stanly (6), in a recent issue of our Journal, summarized the situation quite well when he said "The quality of a curriculum depends on the amount and significance of the general education and basic science requirement, the technical and professional requirement, the level upon which these courses are taught, and the quality of instruction."

In order to check any feeling of complacency we college teachers may have acquired, I have chosen to close my paper with a quotation from Dr. Ernest R. Hilgard, Professor of Psychology at Stanford University when he said (3) "It is surprising that, after all these years of doing it, we know so very little about effective teaching."

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## Programs for Training Foreign Agricultural Leaders

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This opportunity to visit with you on a very important subject is appreciated. I have had the pleasure of working with your Association President, Mr. Lloyd Dowler, in his institution in Fresno, California. Also, many others of you have assisted program specialists of the Foreign Training Division with successful programs for visiting leaders, officials or technicians. They join me with greetings to you.

You may be interested in a quick review of the beginnings of training foreign agriculturists in this country. During World War II the Department of Agriculture and the Department of State established cooperative agricultural stations or missions in a number of Latin American countries. The main aim was to increase the production of strategic and complementary crops of particular value in war time. American

technicians were located at the missions, but a lack of trained national technicians hampered the conduct of the programs. So national technicians were sent to the U. S. for training.

The Department of Agriculture supervised their training programs which provided for work in the agencies of the Department and in Land-Grant institutions. Generally the individuals held key positions and had had profes-

sional training. The U. S. training proved to be most useful.

The enactment of laws providing for further exchanges of technicians and students expanded international training in the U. S. to people from other countries in addition to those in Latin America. Leaders, officials and technicians at once began to embrace the opportunity offered them. Many of these individuals were agriculturists. Following President Truman's Inaugural Address in 1949, the members of the Association of Land-Grant Colleges and Universities volunteered to help carry out the Point IV in this address. In doing so, President John Hannah in a letter to President Truman stated, "One of the greatest contributions America can make to the improvement of living standards, elimination of hunger, and fostering of peace in certain parts of the world is by encouraging education in food production, food handling, food utilization and better homemaking and family life among rural and urban people." The impetus given to international training by this Point IV speech, the Marshal Plan, and the present "Act for International Development" and predecessor similar acts has jumped the number of agriculturally minded visitors from 416 from a few countries in 1951 to 3,541 in fiscal year 1964 from 117 countries.

Assisting leaders and officials from other countries increase their knowledge of the sciences and how to put science to work in the fields of agriculture, home economics and related subjects is coordinated, developed and guided by the International Agricultural Development Service for the Department in close liaison with Land-Grant and other institutions, farm organizations, and segments of agricultural industry. This Service was established by the Secretary of Agriculture in response to the Foreign Assistance Act of 1961 as amended, Section 621 of this Act directs the Administrator of the Agency for International Development to utilize resources of private enterprise and Federal Agencies which have unique facilities for technical assistance. More recently, President Johnson stated in his Agricultural Message to the Congress. "We must use both our agricultural abundance and our technical skills in agriculture to assist the developing nations to stand on their own feet. Under our assistance programs we will make full use of the agricultural know-how in the Department of Agriculture and in the Land-Grant colleges and state universities."

The technical assistance idea was really pioneered in the U.S. We sometimes say, "We invented it." The present world-wide technical cooperation philosophy might be thought of as a continuation and expansion of the partnership established in 1862 when both the Land-Grant college and the Department of Agriculture were

brought into being by Congress. The idea contained in this system of "education for use" in developing a successful society pervades all of our U. S. educational philosophy. Putting science to work—this is our contribution to man's advancement—this we have done in extension education formally since 1914. International technical cooperation has frankly borrowed from the extension pattern. Dean Rusk at a meeting in Washington in March of this year said, "In the U. S., our human and educational resources helped us to escape the view that a college degree elevates you into an aristocracy that is not supposed to work. The notion that a degree holder can do such things as get out and pollinate corn with his own hands has been a vital contribution in our own country and around the world."

The objectives of the training programs are to equip the participant to make a significant contribution to the agricultural and rural life facets of his country; help him transmit improved ideas, skills and knowledge to others in such a way that they put them to work; give him an understanding of the people, culture, attitudes and values of the U. S.; and help Americans gain an understanding of the participant's country, people, culture, attitudes, and values. We are engaged in this exchange of know-how as a contribution to the foreign policy of the U. S. and as an activity related to American membership in international organizations.

Developing and carrying out training, consultation, observation, and study programs for visitors from other countries is a cooperative process. It involves the visitor; the sponsoring agency of the U. S. or foreign government, institution, foundation, organization, or other non-governmental agency; the Department of Agriculture; the agricultural and home economics colleges and universities; agricultural business, industrial firms, and organizations; farm families; educational and cultural organizations; and others. The Department has a professional training staff as a part of the International Agricultural Development Service. We work thru specially appointed contacts in the cooperating institutions, firms, organizations, cooperatives and agencies. Through this cooperative network, the entire agricultural knowledge and competence of the U. S. is available for training opportunities and experience. This experience includes academic enrollment, special courses, on-the-job experience, consultation, and visits. Emphasis is placed on achieving the objectives of the U. S. agency, the international organizations to which the U. S. belongs, or other official sponsor of the visit to the U. S.

Outlines (known as prospectuses) for possible training are prepared annually

and sent to sponsors and U. S. embassies and missions. When a project is received in the Department, a committee of representatives from Services of the Department concerned with the technical aspects of the project prepare a proposed program. The proposal is sent to possible cooperators in the U. S. and to the sponsors of the project for review and revision. A firm program is developed after the participant arrives in the Department, using his ideas and suggestions made by U. S. cooperators, the sponsors of the project and the officials of the foreign institution or governmental agency for which the participant works. Each segment of the firm program is related to each other segment to avoid repetition and to insure a logical sequence of experience. Evaluation occurs during training and just before the participant returns home. During the conduct of the program, every opportunity is used to enable the participant to see and understand the U. S. and our environment and to give the participant opportunities to discuss and describe his environment at home.

In this last aspect many of the smaller institutions provide better opportunities than can be arranged by institutions with large enrollments. The foreign participant is frequently overwhelmed and lost in the larger institution. Also many of the smaller institutions have specialized training opportunities which make them ideal for carrying out the official objectives of the sponsor. Examples of this are Brooks Institute for Photography, Paul Smith's College, Pennsylvania's School of Horticulture for Women, etc. Our records for the last five fiscal years show that between 60 and 200 participants per year have received some part of their training in 53 institutions with less than 4,000 total enrollment in each.

Technical assistance in agriculture to the underdeveloped countries is intimately related to future expanded sales of our agricultural products. It is vital to the world's critical food needs and to our nation's constant effort to seek world order and peace, and it is in the moral tradition that has made our country great.

The economic development of these less-developed nations also has very important implications for the future of American agriculture.

Last year we exported the agricultural production of one out of every four acres harvested in the United States. This included three-fourths of our wheat, two-thirds of our rice, and three-fifths of our nonfat dry milk. Our farm exports reached a record \$6.1 billion in 1964, 35 percent more than in 1959.

A study just being completed by the Economic Research Service indicates that for every 10 percent increase in per capita income in less-developed

countries dollar sales of U. S. farm products go up 21%. This compares with only a 14.2% increase in the developed countries. In other words, as income goes up, less-developed countries increase their imports of U. S. farm products much faster than does the industrialized West, and most of the increase is in dollar sales. If per capita income in less-developed countries increased only \$100 per person, they would likely import over \$3 billion worth of U. S. agricultural products a year or about double the \$1.5 billion we now export to them.

Our own knowledge and understanding has been broadened immeasurably. Hundreds of farm families have been

"trainers" as well as hosts. Questions have been answered for our children—what do others think, how they live, geography, customs, world affairs, etc.

In terms of higher education here in the United States, we feel that it has:

- a. Broadened the educational facilities and increased the enrollment of foreign students in agricultural colleges in the U. S.
- b. Broadened the outlook and curriculum of U. S. agricultural colleges. Examples: Increased number of courses in "World Agriculture."
- c. Brought new agricultural concepts, ideas and technical information to U. S. agricultural colleges—many

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**Animal Sciences Curriculum — (Continued from Page 37)**

<b>I. Required of all students in the School of Agriculture</b>	
Mathematics (College Algebra and Trigonometry)	6 Credits
Chemistry (6 credits of inorganic and 4 credits of organic)	10 credits
Physics	4 credits
Botany	4 credits
Zoology	4 credits
Communications (including English and Speech)	15 credits
Business and Economics	6 credits
Freshman Agricultural Electives	9 credits
Military Training (2 years)	8 credits
<b>Sub-total</b>	<b>66 credits</b>
<b>II. Required of all students majoring in the Animal Sciences</b>	
Biochemistry	4 credits
Microbiology (Bacteriology)	4 credits
Genetics and Animal Breeding	6 credits
Animal Nutrition (Feeds and Feeding plus ruminant or monogastric nutrition)	6 credits
Physiology (basic physiology plus physiology of Reproduction, lactation or environmental)	6 credits
Animal Production and Management (Beef, Sheep, Swine, Dairy or Poultry Production)	6 credits
Animal Products (Meat, Poultry or Dairy products)	3 credits
<b>Sub-total</b>	<b>35 credits</b>
<b>III. Electives—for training in other fields and specialization in the Animal Sciences or other Agricultural areas.</b>	
Non-Agricultural (humanities, social sciences, etc.)	12 credits
Free electives (Agricultural or otherwise)	23 credits
<b>Sub-total</b>	<b>35 credits</b>
<b>Total required for graduation</b>	<b>136 credits</b>

**Animal Food Science Option**

<b>I. Required of all students in the School of Agriculture</b>		(See Above)
<b>II. Required of all students majoring in Food Technology</b>		
Analytical Chemistry	4 credits	
Food Evaluation	3 credits	
Food or Dairy Microbiology	4 credits	
Food Preservation	5 credits	
Food Processing Equipment or Dairy Plant Equipment	3 credits	
Food Chemistry	4 credits	
Food Plant Sanitation	3 credits	
Food Technology Seminar	1 credit	
<b>Sub-total</b>	<b>27 credits</b>	
<b>III. Electives—for training in other fields and further specialization in Animal Food Science or Food Technology</b>		
Non-Agricultural (humanities, social science, business, etc.)	12 credits	
Free electives	31 credits	
<b>Sub-total</b>	<b>43 credits</b>	
<b>Total required for graduation</b>	<b>136 credits</b>	

of an administrative, policy, research, teaching methods and instructional nature.

- d. Helped immeasurably in establishing relationships and arrangements for a continuing exchange of agricultural information between institutions of higher learning in this country and abroad.

As President Johnson has said, we are proud of our American agriculture, with its record of success which contrasts so sharply with agricultural failures of the Communist countries. We must use our technical skills to assist the less-developed countries to strengthen their ability both to produce and to support rural development.

**Animal Food Science Option**

The Animal Food Science option is a new option. It encompasses the Dairy manufacturing curriculum previously offered and includes courses in meat and poultry products. Students enrolled in this option will follow the basic curriculum for Food Technology in the School of Agriculture, but will be counseled by members of the Animal Sciences staff interested in dairy products, meat or poultry products. In addition to the basic Food Technology curriculum, students will be required to take three credits in the Animal Sciences, other than food products. The plan of study may be summarized as follows: (See below, Animal Food Science Option)

**COURSE CHANGES**

In 1962-63, the Departments of Animal Science, Dairy and Poultry Science were offering a total of 85 courses with credits totaling 187 hours, exclusive of the M. S. and Ph. D. research courses. After these three Departments were combined into the Department of Animal Sciences on January 1, 1962, 17 courses were deleted and 5 new courses were added, reducing the course offerings to 73 and the credit hours to 170. These changes were effective in the fall of 1963.

In the spring of 1963, one course was deleted and one course was added so that the course offerings and credit hours remained the same for the fall of 1964.

In the spring of 1964 four courses were deleted and one new course in artificial insemination was added so that the department will offer 70 courses and 163 credit hours in the fall of 1965. These course offerings may be summarized as follows:

## COURSE CHANGES

Subject Matter	No. of Courses	Credit hours by level of instruction						
		100	200	300	400	500	600	Total
General and Introductory .....	7	6*	5	2	2	2	0	17
Genetics and Breeding .....	9	0	0	0	3	6	7	16
Nutrition .....	10	0	4	0	3**	13	6	26
Physiology .....	7	0	0	0	6	7	6	19
Production and Management .....	8	0	0	6	0	15	2	23
Meat and Poultry Products .....	5	0	3	3	0	6	3	15
Dairy Manufacturing .....	13	3	0	4	3	23	0	33
Seminars .....	7	0	0	0	2	0	5	7
Special problems and research .....	4	0	0	0	1-3	0	1-4	7
<b>Totals .....</b>	<b>70</b>	<b>9*</b>	<b>12</b>	<b>15</b>	<b>22**</b>	<b>72</b>	<b>33</b>	<b>163</b>

\* 3 credits of Animal Agriculture offered at Vincennes University only.

\*\* 3 credits of nutrition offered for Veterinary students only.

### STUDENT CONTACTS AND ENROLLMENTS

During the 1962-63 academic year, undergraduate enrollments in the Animal Sciences courses totaled 680 in the first semester and 696 in the second semester for a yearly total of 1376.

In 1963-64 this had increased to 775 in the first semester and 738 in the second semester for a total of 1513 for the year. In the fall of 1964, undergraduate enrollments totaled 689 in Animal Sciences Courses and graduate enrollments totaled 183.

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# COMMITTEE REPORTS . . .

## IMPROVEMENT OF INSTRUCTION

The Committee on Improvement of Instruction consists of James D. Hamilton, Chairman, Austin Peay State College, Hilbert Kahl, Northeastern Junior College, Dr. Edward W. Dayton, Nicholls State College, and Glenn E. Karls, Southwest Missouri State College.

The Committee decided to make a study in the area of Research Material Available to Institutions That Were Members of the National Association of College Teachers of Agriculture. A questionnaire was formulated and mailed to thirty institutions that were members of NACTA. There were twenty-two or 73.3 per cent of these questionnaires completed and returned for tabulation. One questionnaire was late being returned and was not included in the study.

The questionnaire was formulated in such a way that the following objectives could be determined:

1. The need for increasing the availability of research information from sources other than the local institution.

2. The various sources of research information available to those institutions that are members of NACTA.

3. The distribution of research information within those institutions that are members of NACTA.

4. The distribution of research information in the various fields of agriculture in those institutions that are members of NACTA.

The need for increasing the sources of research information other than the

research compiled by the local institutions that are members of NACTA is indicated by the following tabulations.

1. There were nine or only 41 per cent of the institutions returning the questionnaire that performed research in the field of agriculture.

2. There were thirteen or 59 per cent of the institutions that performed no research in the field of agriculture.

3. There were only two or 9.1 per cent of the institutions that performed very much research in the field of agriculture.

The institutions, that are members of NACTA, receiving research information from various sources without requesting this information is indicated by the following tabulations:

1. There were ten or 45 per cent of the institutions that received considerable research information from the local state experiment stations.

2. There were three or 14 per cent of the institutions that received some research information from the local state experiment stations.

3. There were nine or 41 per cent of the institutions that received no research information from the local state experiment stations.

4. There were fourteen or 63.6 per cent of the institutions that received research information from their local land grant college.

5. There was one or 4.5 per cent of the institutions that received some research information from their local land grant college.

There were 144 undergraduate students majoring in the Animal Sciences during 1962-63, and 165 during 1963-64 and approximately 160 during 1964-65. These are being counseled by 24 staff members in the department. A total of 60 students will graduate in 1965 as compared to 41 in 1964 and 45 in 1963.

In addition to the above, there were 62 graduate students in the department working toward the advanced degrees of Master of Science (thesis and non-thesis) and Doctor of Philosophy in the fall of 1962. This increased to 67 during the spring semester of 1963, 69 in the fall of 1963 and 74 in the spring of 1964. During the fall of 1964, there were 109 graduate students majoring in some area of the Animal Sciences.

Animal Sciences instructors have additional contacts with approximately 100 Winter Course students in seven courses offered for an eight week period in January and February.

6. There were seven or 32 per cent of the institutions that received no research information from their local land grant college.

7. There were nineteen or 86.4 per cent of the institutions that received research information from the U. S. Department of Agriculture.

8. There were two or 9.1 per cent of the institutions that did not receive research information from the U. S. Department of Agriculture.

9. There were twenty or 91 per cent of the institutions that received research information from other sources.

10. There was one or 4.5 per cent of the institutions that received no research information from other sources.

11. There was one or 4.5 per cent of the institutions that did not respond to this question.

The institutions, that are members of NACTA, receiving research information from the local state experiment stations and from the local land grant colleges by requesting this information indicated by the following tabulations are:

1. There were sixteen or 72.8 per cent of the institutions that received research information from local state experiment stations.

2. There was one or 4.5 per cent of the institutions that received some research information from the local state experiment station.

3. There were two or 9.1 per cent of the institutions that received no research information from the local