There are many who believe the world faces a critical food shortage during the next quarter century when, as predicted, its present 3.1 billion population will soar to over 6.0 billion. Some suggestion of this problem's seriousness is apparent in recent assertions by the United States Department of Agriculture that our country cannot provide the expanding food needs of its allies beyond 1980 unless food production is increased significantly abroad. Such a direct challenge must claim the attention of thinking Americans, and, for that matter, Europeans, not just for the moment, but over many years to come. For, reminiscent of Lady Macbeth's exclamation, "Out, out, damned spot," a dark spot remains in world food supplies and may become just as difficult to remove.

The American is often divided between his generosities and his procrastinations, the one fostered by an active conscience, the other influenced by a fear of being taken for a dupe. But unless broad plans are acted on soon, the costs of supporting the hungry part of the world will become so staggering as to make him forget about the niceties of his position. It is apparent that we, as a nation, need to acquire an understanding and appreciation of the forces that effect food production and processing in less fortunate countries, and to select and train scientifically oriented young men and women for effective leadership in international food development.

The role of the American university.

In the ever increasing critical matter of preventing starvation, the role of the universities is very important. It goes to the very heart of the reasons for their existence, the search for truth, and the dissemination of knowledge to lighten the load of mankind.

Demonstration of leadership for creating adequate world food supplies is evident among our nation's universities. In many United States land grant universities it has taken shape through the establishment of International Agriculture Development centers.

Figure 1. An outside guest lecturer presenting his views on International Food Development. J. Mittain, Roquefort Association, Paris France.

The framework for action is thus apparent, but the mode of attack which would give the best results is not so clear. For example, many questions arise. What type of a program must a university conceive to attract gifted students, particularly Americans, for eventual service overseas in food development? Once attracted, what type of training will give the students effective tools and incentive to cope with complex development? Are there specific International Food Development principles and, if so, how are they distinguished from superficial, passing innovations? Can an international career philosophy be created among Americans in a manner calculated to give technical excellence? How do we establish the student once he has received training?

Some exposure abroad to development projects convinced your speaker that our interested students must obtain more than a superficial knowledge of international food development, that they must learn what makes development programs work or fail, and that they must become acutely aware of the problems, the opportunities, and the nature of peoples involved. In this way, such students are better prepared to conduct necessary projects in a professional manner.

It is said that random thoughts often set the stage for specific action. The College of Agriculture at Cornell University proved the validity of this point.
by approving in 1965, as a part of its over-all program, a new course dedicated to the above principles, entitled "International Food Development."

Dairy and Food 440 - International Food Development.

The new course is described in the college catalogue as follows:

"A study of programs, technical problems, and progress associated with developing acceptable food supplies in critical world areas. Plans for increasing world protein resources for the human are to be discussed. Special attention is to be directed to the organization, operations, relationships, and contributions of U. N. technical agencies, FAO, UNICEF, WHO, and non-governmental and governmental organizations in the field."

In its presentation, this 3-credit course was given two days weekly with each period covering two hours. The first 55 minutes of each meeting was devoted to a formal presentation, Table 1, followed by a short coffee break, and the last 55 minutes was set aside for informal discussion between speaker and students and between students. A number of outstanding speakers with broad experience in developing world areas and international agencies were invited to assist the resident lecturer. These included representatives of the United States Department of Agriculture, the Food and Agriculture Organization of the United Nations, the World Bank, private industry, and the College of Agriculture, Table 2. Each lecture was integrated and oriented to give a definitive continuity so that the course had a forward movement with a beginning and ending and a substantial middle, and was not simply a series of seminars.

Table 1. Lecture Outline in International Food Development

<table>
<thead>
<tr>
<th>Lecture No.</th>
<th>Lecture - Discussion</th>
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<td>Food, Man, and the World Around</td>
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<td>Organization and Operations of F. A. O.</td>
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<td>Programs and Problems of UN Technical Agencies</td>
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<td>Activities of Non-Profit Foundations and Universities in International Food Development</td>
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<td>Potential for Food Development in the Mediterranean and Near East</td>
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<td>Challenges Facing Pakistan and India in Food Development</td>
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<td>Food Development Characteristics of Far East. Visit to Food Science and Technology Department, Geneva, New York</td>
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<td>Conceiving and Planning International Food Development Projects</td>
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<td>23</td>
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<td>24</td>
<td>The Machinery of Financing International Food Development</td>
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<td>26</td>
<td>Establishment of Principles for International Food Development</td>
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<tr>
<td>27</td>
<td>Careers, New Challenges, and Dimensions</td>
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Table 2. Outside Lecturers and Discussion Leaders for International Food Development

E. J. Siegenthaler—Former resident of Switzerland. Consultant to the F.A.O. with 5 years in field in Guatemala, Jordan, and Nepal. Presently Research Associate at Cornell University. Lecture 5.

R. W. Phillips—Director, International Organizations Staff, Office of Assistant Secretary, Department of Agriculture, Washington, D.C. Member of the Council of the F.A.O. Lectures 6 and 7.


E. O. Anderson—Director of Milk Quality Improvement, State of Connecticut, Retired University of Connecticut professor. Four years experience in Europe and six years in Pakistan and India under U. S. State Department technical programs. Lectures 19 and 20.


Remaining lectures given by Cornell University Staff: F. V. Kosikowski, Lectures 1, 2, 3, 4, 8, 10, 11, 12, 13, 14, 15, 22, 26, 27; K. L. Turk, Lecture 9; R. F. Holland, Lecture 16; and D. B. Hand, Lecture 21.

There were no required textbooks, but there was much required reading. Standard texts have yet to be written on this subject as an academic discipline, but many books covering some portion of the
general area were available. Among the 26 sources utilized for outside reading (note Bibliography Section), several received particular attention. They were, "Humanity and Subsistence," proceedings of a symposium, Annales Nestlé, Vevey, Switzerland, 1960, and "Population and Food" by Cepede, Grand, and Houtart, published by Sheed and Ward, New York, 1964.

Originally intended for dairy and food science senior undergraduate and graduate students, the course was oversubscribed, in addition, with students from the arts and the engineering colleges. Also, about five housewives attended the lecture regularly, as did one beagle hound. The students, some of whom were majoring in sociology, economics, and entomology, represented 14 countries, and included three former Peace Corpsmen among their ranks. It aptly demonstrates that the field of food science has interest to a general audience.

A happy note was the intense personal participation of most of the students in the informal discussion period. These spirited discussions, often extending an hour longer than scheduled, usually had to be terminated abruptly by the instructor because the thermal capacity of the room had been over-extended and there was no pressure safety valve.

One reason for establishing this course was to give the student an appreciation of the enormous problems facing international food development. He learned, for example, of birth control attitudes and thermal capacity of the room had been over-extended milk production in primitive areas, as did one beagle hound. The students, some of whom were majoring in sociology, economics, and entomology, represented 14 countries, and included three former Peace Corpsmen among their ranks. It aptly demonstrates that the field of food science has interest to a general audience.

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One reason for establishing this course was to give the student an appreciation of the enormous problems facing international food development. He learned, for example, of birth control attitudes and their pertinence to food supplies, of spoilage losses of food and means for control, of the problem of milk production in primitive areas, of the role and sources of credit, and of the international opportunities for qualified students.

Another basic reason was to ascertain and define principles of international food development. This was left for the students to cope with in the latter stages of the course by requiring from each a term paper on the subject, "Principles of International Food Development." Some of the considerations which emerged included the following:

"Education is the first requirement for development."

"Field projects must start on a small, controllable scale."

"Nationals of developing countries must be made partners in projects."

"Projects successfully launched must be turned over to nations in due course."

"Proper credit lines must be established."

"Training of leaders must combine scientific and technical know-how with broad understanding of human behavior."

Acquiring experience.

It is a relatively easy task for a university to expose its students in the classroom to the experience of others in international food development, but it is not so easy to give the student first-hand contact with the realities of development. How then should an interested student gain sufficient direct experience at an early stage in his career to make him useful in project development and, equally important, to enable him to realize whether or not an international career suits him?

Programs which permit the young, technically qualified student to become actively engaged in international food development before he accepts it as a career should be encouraged. For example, he might be sent to administrative and field areas of international organizations engaged in such development. Here he could observe planning and supervision of projects. In turn, the intelligent, dedicated student could lighten the work load of overworked technical officers in these organizations by assisting in routine duties and paperwork, allowing the latter to concentrate on the tasks which demand their highly technical skills.

Several broad trainee programs for fitting technically trained college students into existing international organizations' administrative and field units for one-year periods are now under consideration.

The role of the student in the fight against starvation.

It has been amply demonstrated that a number of young men and women with special technical skills are willing to make a life career in international food development. But more students in the United States and other developed countries must become imbued with this spirit, and to become effective in this work, they must acquire the tools of modern day science.

It was J. R. Enderle who said "Food development on an international scale will become a dynamic force only when knowledgeable people in the area of food production and processing gain an appreciation for the plight of the underfed and then establish a set of principles to guide themselves in carrying out the development project." Who was Enderle? Why, he was a student in the new course at Cornell University and the quotation comes from his term paper.

In summation, we have a role like the Romans in 200-100 B.C., but directed toward a more noble cause. Their objective was the conquest of peoples; ours the conquest of hunger. Governments and universities, citizens and students, they all have a valuable contribution to make, and it must be made with
erve, with intelligence, with compassion, and with knowledge of the natural forces at work. Time is beginning to run out; one can almost hear the grains of sand slipping through the hour glass.

BIBLIOGRAPHY


*Books used most extensively in course.

MEETING ON SALMONELLOSIS FROM A FOOD INDUSTRY STANDPOINT

The Western New York Section of the Institute of Food Technologists, in cooperation with the U. S. P. H. S. Communicable Disease Center, will hold a one-day meeting on problems of salmonella in food supplies. The meeting will take place on November 17, 1966, at the New York State Agricultural Experiment Station, Geneva, New York. The program will include a short history of salmonellosis in food supplies, a discussion of salmonellosis from the food industry viewpoint, a paper covering current research on laboratory techniques, and a discussion of methods of eliminating salmonellosis in food supplies.

The program is open to all research and control personnel interested in salmonella in food supplies. For further information, contact Dr. Frank E. Weber, The R. T. French Company, 1 Mustard Street, Rochester, New York 14609.

NEW BROCHURE COOPERATIVE PROGRAM FOR MILK CERTIFICATION

The Public Health Service has just released a revised brochure "Grade A" Pasteurized Milk—Safe and Reliable". The new brochure describes concisely the history of the Cooperative State-PHS Program for Certification of Interstate Milk Shippers, the manner in which the program operates, and its growth, benefits, and accomplishments.

The underlying purpose of the Grade "A" Pasteurized Milk program is stated and the development and operation of the Certification system is reviewed. Benefits to both milk exporting and importing states and especially to the consumer are enumerated briefly.

The brochure is designed for distribution in the promotion of Grade "A" Pasteurized Milk programs. Copies are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402, at five cents per copy or in quantity lots at $3.75 per 100 copies.