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## Unhappy Paradox

Modern agricultural production is a triumph of the application of knowledge derived from basic research to problems of human nutrition and welfare. During the past quarter century agricultural practice has undergone a full-scale revolution as a result of the integrated application of many technologies to the total problem of crop and animal production, nutrition, protection, and utilization. Advances in the engineering, chemical, physical, and biological sciences have in the most highly developed countries of the world permitted qualitative and quantitative improvements in agricultural production in new orders of magnitude and at the same time have pointed the way to future improvements of similar or even greater dimensions.

The secret of this success story lies in men rather than machines. The outpouring of trained scientists and others destined to work in some aspect of agriculture has made possible extraordinarily creative and exceedingly rapid advances in science and technology. The agricultural producers in the industrial countries are highly sophisticated groups who have taken full advantage of available knowledge and tools, with the result that production has steadily increased, while manpower requirements and costs have simultaneously declined. Thus, today the citizens of Western and certain other nations are able to enjoy appetizing, high-quality, and nutritious domestic and exotic foods without seasonal limitations and at reasonable prices. However, regardless of past achievements, it is entirely clear that future advances in response to the demands of a growing population are going to require more extensive and greatly intensified scientific research and development.

With the knowledge and tools now available to society for the satisfaction of agricultural requirements, it seems paradoxical that a large proportion of the world's population lives at substandard nutritional levels. It is frequently suggested that the massive application everywhere of modern technologies could readily eliminate the specter of hunger which stalks so many lands; theoretically, such massive application could be carried out, but in practice this is impossible.

The great barrier is now, and will continue to be for a substantial period in the future, the lack of sufficient numbers of nationals able to participate in research and to contribute otherwise to the development and application of technologies in support of progress on all fronts. Thus, the future economic growth of many of the less well-developed nations of the world will depend precisely upon the rapidity with which their citizens can be trained for the multiplicity of responsibilities related to agricultural production, distribution, marketing, and utilization and attendant occupations.

Friendly nations cannot resolve the problems of the less well-developed or emerging countries, but they can help to speed the processes of social and economic growth. Efforts should include industrial and engineering projects, but more fundamentally they must emphasize education at all levels. Especially important is the utilization of technical assistance programs as intensive training media. Training abroad for special purposes is vitally important, but the broad base for economic growth and social progress is to be found at home, through interrelated programs designed to prepare growing numbers of nationals to respond to the demands of evolving social patterns.—J. G. HARRAR, *Rockefeller Foundation, New York*.