

# AGRICULTURE



The Fight to Feed a Hungry World

**PEACE CORPS**

COVER PHOTO—Volunteer Mark Fritzier is a farm extension agent in Hyangja, Nepal, in the shadow of 26,500-foot Annapurna.



*Volunteer Mike LeVesque works in a small-scale irrigation project near Adi Seharti, Ethiopia. Here, his crew starts a pump that will bring water to the fields adjacent to the creek.*

# HUNGER

## Peace Corps' Role in World Food Crisis

The average American hog eats better than two-thirds of the world's people. More than two billion human beings will go to bed hungry tonight—and every night; 10,000 of them will die today—and every day—of starvation or malnutrition.

And meanwhile, the population grows 191,000 each day, pushing us toward a world of more than seven billion people by the year 2000.

The question is: Can the world's farmers and fishermen produce enough food to stave off the unmeasurable disaster of mass starvation until developing nations can control their exploding populations? The answer is that it is within human ability to supply enough food for everyone. The late President Kennedy said: "We have the capacity to eliminate hunger from the face of the earth. Victory will not come in the next year . . . But it must in our lifetime."

The first signs of that victory may now be at hand.

Perhaps the key indication has been in the disproving of a myth: that the poor farmers in developing countries resist change and cling to the traditional methods they have used for thousands of years. This is nonsense. If the world's poor farmers have not changed, it is only because nobody could prove to them that a change was worthwhile. As soon as someone has demonstrated that the farmer can afford the risk of change, that by planting a new variety of wheat or corn and by giving it proper care he can grow two or four or six times as much food in a year, then that "stubborn, backward" farmer changes with surprising nimbleness.

When rice farmers in the Philippine province of Laguna were shown a new variety that would yield a crop up to six times larger than they had ever grown before, 52 per cent of them changed over within 18 months.

In Mexico, 95 per cent of the wheat acreage is in a new variety that was

introduced only four years ago.

In Pakistan, agricultural progress has become so rapid that the country is becoming self-sufficient in food.

And in India, which many experts had written off as hopeless, grain production has increased 20 per cent in one year.

The ways to improve food production—the agricultural research, the better variety of seed, the correct fertilizer, the insecticides—are already at hand. But along with the world shortage of food there is another equally critical shortage of people trained to transmit knowledge. It is here that the Peace Corps plays its role in world agriculture, supplying those "missing links" in communication between those who develop agricultural knowledge and those who must use it.

So crucial is this effort that more than 3,350 Volunteers—nearly 30 per cent of the total number—are involved in agriculture or directly related projects in 49 of the 59 nations which the Peace Corps serves. And the effort is increasing. By 1970, the Peace Corps estimates that more than 50 per cent of all Volunteers will be involved in these types of programs.

The Peace Corps now concentrates its agricultural programs in "high-impact" areas in countries that have given food production a high national priority and are devoting intensive efforts to it. The Government of Nepal has determined that increased rice production is critical to its needs, so Volunteers are introducing IR 8—the new "miracle variety"—to farmers there. Potato farming has high priority in Bolivia, and Volunteers there have been remarkably effective in promoting the planting of a new high-yield potato. Ecuador considers livestock improvement of prime importance, so Volunteers are helping breed and distribute better strains of beef and dairy cattle.

Most of these agriculturalist Volun-

teers are "A.B. Generalists," persons with liberal arts educations and little or no practical farm experience. The Peace Corps recognizes that it cannot convert a history major into a farm expert in 12 weeks, but it has learned that it can teach a specific skill—the cultivation of one crop, the care of one kind of livestock—to persons with little or no agricultural experience.

And to back these generalists up, to give them the additional technical support they need, the Peace Corps uses "specialist" Volunteers, agricultural school graduates or working farmers who not only work in the fields and paddies but also in experimental stations and government extension services.

Peace Corps programs are not going to revolutionize world agriculture overnight. But they are a beginning—and perhaps the biggest beginning—at the "grass roots" where success or failure is determined.

## Help Wanted

The Peace Corps farmer isn't always an agriculturalist to begin with. In fact, the Peace Corps looks for three types of farmers for its overseas programs:

1. The Volunteer with an agriculture degree who plans to make agriculture his life work. See Page 4.
2. The Volunteer with a farm background: he may be a liberal arts graduate who was raised on a farm or he may be a working farmer. See Page 8.
3. The Volunteer with a liberal arts degree and no farm background at all. This is the "A.B. Generalist" who will be trained by the Peace Corps in a specific agricultural skill; the green thumb is provided free of charge. See Page 5.

# FOR AGGIES...

## The Challenges of International Agriculture

**T**he demands for agricultural skills in the developing countries of the world are so staggering that the specialized graduate who becomes a Peace Corps Volunteer is guaranteed immediate total immersion in his profession.

The Peace Corps is expanding its agricultural commitments and needs more and more graduates of all disciplines—agricultural economics, agricultural education, agricultural engineering, agronomy and soil science, animal husbandry, forestry, horticulture and veterinary medicine. Because of improved Peace Corps programming, an agriculture graduate can be certain that his Volunteer assignment will be within his own specialty or a closely related field. More than that, he will probably know where he is going and precisely what he will be doing there.

Previously, agriculture specialists were assigned in relatively large groups to work in a specific project. But now, because of the expansion of agriculture programs, a few specialists are assigned to work with higher-level host country personnel and to act as liaison and technical advisors to the larger number of agricultural background and generalist Volunteers who are working at the village level. In some cases, specialists are given individual assignments to meet some critical need in a host-country program.

The agriculture specialist will be given far heavier responsibility in his field than he could otherwise find as a recent graduate.

There is a chance he may become frustrated by the sheer immensity of his task. But there are far greater chances for satisfaction: because of the nature of his assignment he will be able to see, much more clearly than other Volunteers, the results of his efforts.

The challenges have been so stimulating that 37 per cent of all returning Volunteers have continued their education, 27 per cent at the graduate

level. They are helped in this by the \$75 a month they have accumulated during their overseas service. In addition, many Volunteers have changed their career goals. A number of agriculture graduates, having had the taste of international agriculture during their Peace Corps service, are now with other government agencies or private foundations in that field.

A former agronomist Volunteer who switched to international agriculture explained his decision this way: "Our American agriculture has sophistication, but a great part of the world's has not. The challenge is to get our knowledge to others. In my lifetime, I can make more of an impact in international agriculture than anything else I could do in agriculture."

Following are samples of how agriculture graduates are now being utilized.

### AGRICULTURAL ECONOMICS

**Marketing:** Volunteers are helping create new markets and improve existing ones. They are also working directly with farmers to upgrade their products, establish grade standards and improve packaging methods.

**Management and Planning:** Agricultural extension personnel in many developing nations are sparsely trained and have little on-the-job experience. Volunteers backstop these counterparts with practical advice on the financial aspects of management and planning at the farm level.

**Statistics:** Volunteers are establishing systems for acquiring and maintaining data on pricing and production for agricultural products, and are training personnel to analyze existing data so that future agriculture programs can be better planned.

*(Continued on page 6)*

*A.B. Generalist farmers bound for Ceylon learn the fundamentals of rice production at Baybay Agricultural School in the Philippines. The course includes class instruction on identifying plants and insects.*





*Dr. Ron Smith, a Volunteer veterinarian at the Santo Domingo Cattle Reproduction Center in Ecuador, examines a calf afflicted with parasites.*

## A Place for A.B. Generalists

Many liberal arts graduates considering Peace Corps service shudder at the possibility of being assigned to an agricultural program. They have had no farm experience, know little about agriculture and wonder how they could be of any help to farmers in a developing nation. Yet it is these Volunteers, the A.B. Generalists, who are the strong backbone of Peace Corps agricultural programs.

Through the uncomfortable route of experience, the Peace Corps has learned that it can transform a liberal arts graduate into an agricultural agent in 12 weeks—and that he will then do an effective job if given the necessary technical sup-

port. Training programs no longer attempt to create all-around farmers; instead, training concentrates on the particular skill the Volunteer will need in his assignment.

For example, a Volunteer destined for a village-level food production program in India is trained in the cultivation of hybrid maize and hybrid sorghum. And he'll learn enough about it to be considered an expert by the farmers he works with.

Volunteers bound for the Chad program were trained intensively in well drilling and maintenance—and are now sinking 134 wells and training the villagers how to use them.

In Bolivia, generalists are doing a remarkable job of increasing wool production (and thus farm income) by teaching *campesinos* to use shears on their sheep rather than broken glass or jagged tin. These Volunteers were trained in the basics of wool production, including shearing.

Far more important than technical skills, however, are the other qualities the generalist brings to the Peace Corps: his desire to help others and his abilities to adapt and to organize. The sheep shearing or the well drilling is the easiest part of the job. It is tougher to become a trusted member of a village. It is tougher to set an example seven days a week. It is tougher to guide rural people to recognize their own needs and then to take those first cautious steps toward helping themselves. Those are the key goals of all Volunteers and frequently the generalist is best prepared to achieve them.

**Cooperatives:** Most agricultural economist Volunteers are working in this field, establishing or supporting cooperatives for purchasing, credit, marketing, processing and transportation.

Current and future programs: Bolivia, Chad, Chile, Colombia, Dominican Republic, Ecuador, Fiji, Gambia, Guatemala, India, Lesotho, Malaysia, Micronesia, Niger, Nigeria, Peru, Sierra Leone, Upper Volta, Venezuela.

#### AGRICULTURAL EDUCATION

In many developing countries as much as 80 per cent of the population is engaged in farming, yet few of the secondary schools have agricultural courses because there are no instructors. Volunteers are now assigned to high schools and agricultural training centers developing curricula, programs of practical farm machinery repair and maintenance, teaching basics of soil and water conservation, developing rural youth groups and assisting in teacher training. Current and future programs are in Lesotho and Malaysia.

#### AGRICULTURAL ENGINEERING

**Irrigation:** Increased pumping of water reserves and misuse of water through poor practices has created serious water shortages in the Near East and Asia. Volunteers are assisting in the design, construction and operation of new irrigation systems; conducting water use surveys; teaching land-leveling practices and cooperative methods of water use to villagers. In areas of the world where excess water is the problem, Volunteers are designing surface and underground drainage systems.

**Soil Conservation:** Volunteers are surveying, mapping and planning projects. Others are working directly with farmers in the construction of terraces, laying out contours and demonstrating the use of grasses on slopes. When materials are available, Volunteers are designing and constructing such facilities as drop dams and spillways.

**Farm Mechanics:** Volunteers are involved in designing shops for the maintenance and repair of farm equipment; working with machinery dealers

to assemble farm equipment; teaching secondary school and adult classes in farm mechanics and assisting in the modification of existing implements for use under local conditions.

Current and future programs: Botswana, Chile, Colombia, Dahomey, Ecuador, El Salvador, India, Iran, Malaysia, Niger, Nigeria, Sierra Leone, Tanzania, Thailand, Upper Volta.

#### AGRONOMY AND SOIL SCIENCE

Volunteers are working at all levels, from government experimental farms to the villages, to improve agricultural technology. Among their projects are the introduction of hybrid corn and new varieties of cereal grains; demonstrating the safe and proper use of chemicals to control insects and plant diseases; introducing chemical fertilizers and explaining the need for soil testing and long-range fertilizer programs. Volunteers in soil and management projects are teaching farmers the effects of tillage, drainage and irrigation, and researching soil problems of their area.

Current and future programs: Af-

*Near Korem, Ethiopia, a farmer tills his land with wooden plow and oxen—the way it has always been done. Volunteers often find this kind of farmer eager to learn new methods.*



ghanistan, Cameroon, Chad, Chile, Colombia, Costa Rica, Dahomey, Ecuador, Fiji, Guatemala, India, Kenya, Korea, Malawi, Micronesia, Morocco, Peru, Sierra Leone, Turkey.

### ANIMAL HUSBANDRY

**Swine:** Volunteers assigned to government breeding stations are working to improve current stock. Other Volunteers are introducing balanced rations for breeding stock and for fattening swine, and working to establish the foundations necessary for control and prevention of diseases.

**Beef:** Working with beef producers, Volunteers are upgrading breeding stock, are introducing grading, inspection and processing of beef animals for market and improved range and grasslands management through pasture rotation, fertilization and new grass varieties.

**Dairy:** Volunteer dairy extensionists, working with cattle, goats, sheep and buffalo, are introducing better dairy methods. They are teaching mastitis and brucellosis control, and the necessity of proper feeding.

**Poultry:** Beginning at the level of convincing villagers to keep their birds penned, Volunteers are working at all levels of poultry production, health and management, including research, marketing and processing.

Current and future programs: Bolivia, Ethiopia, Honduras, India, Malawi, Micronesia, Morocco, Peru, Sierra Leone, Venezuela.

### HORTICULTURE

**Vegetables:** An increasing number of Volunteers are being utilized in rural community development projects. They assist host country extension agents in planning and conducting demonstrations to teach farmers better production practices; they introduce new vegetable varieties better adapted for long-distance transportation in an effort to extend marketing areas; they experiment with new harvesting, grading and packaging techniques.

**Fruits:** Volunteers are teaching propagation in government and private nurseries; others are working directly with the farmers to improve cultural and production practices.

Current and future programs: India, Iran, Kenya, Micronesia, Morocco, Niger, Sierra Leone.



*Volunteer Jon Scherer (right) and his Indian counterpart plant a high-yield variety of potato in a demonstration plot in the Gurgaon District of Haryana State.*

### VETERINARY MEDICINE

Volunteer veterinarians are doing everything from teaching in universities to making farm visits to treat sick animals. Duties include policing the manufacture of veterinary drugs, management of programs in slaughter and processing, direct basic and applied research in animal diseases, and participation in country-wide disease control programs. Volunteer vets must often improvise or substitute because proper equipment and drugs are not available.

Current and future programs: Bolivia, Chile, Costa Rica, Ecuador, El

Salvador, Fiji, Guyana, Kenya, Malawi, Micronesia.

### FORESTRY

Volunteer foresters are working in programs to increase industrial wood and field supplies through reforestation, stabilization and protection of watershed areas, and utilization and protection of forests. Activities include timber production, logging, surveying, timber estimating, park management, forest protection, forest-stand improvement, flood control and wood products manufacturing.

Current and future programs: Chile, Dominican Republic, Malawi, Malaysia, Nepal, Niger, Peru.



*Dennis and Luise Wheeler work in Guatemala's Peten jungle in a colonization project. Dennis is shown at a village meeting, helping organize a farm co-op.*

# FOR FARMERS...

## A Need for Those With Practical Know-How

Countries in which the Peace Corps serves have great need for Volunteers with agricultural backgrounds—liberal arts graduates who were raised on a farm, or non-graduates who have extensive farming experience. Such a person may not have the highly technical training of the specialist, but he does have something that most generalists lack: practical farm know-how.

Volunteers with agricultural backgrounds usually work at the village level, but with greater technical responsibilities than generalist Volunteers can be expected to handle. One of the most important jobs is advising and supporting other Volunteers in the area.

Here are examples of how these Volunteers are utilized in current programs:

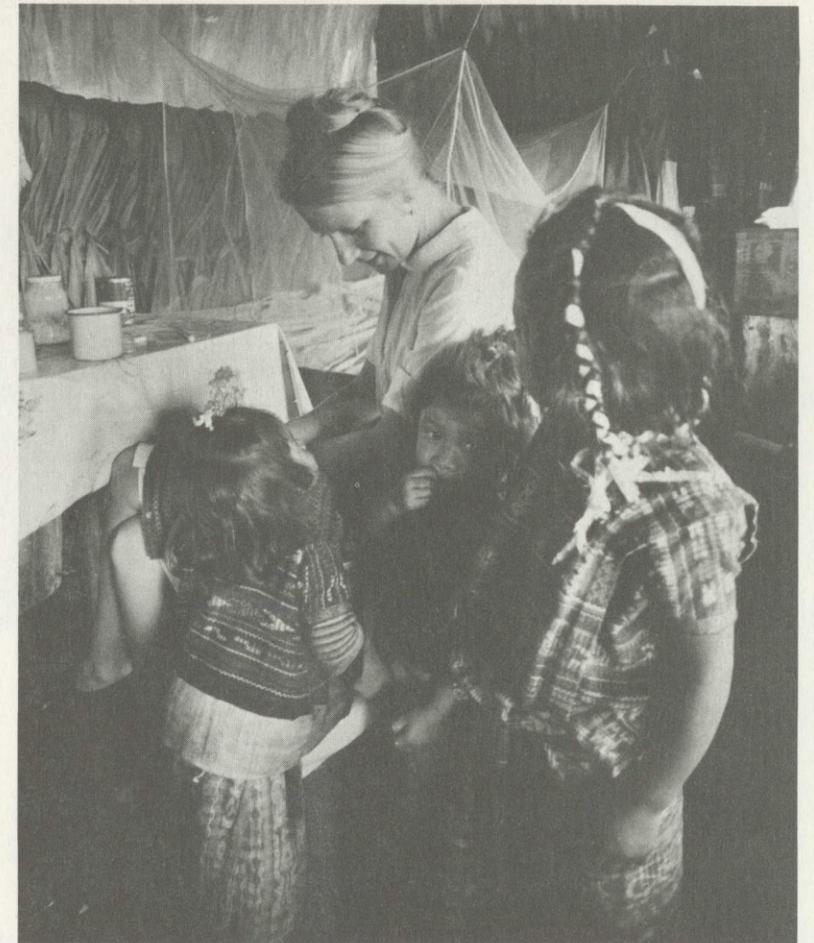
- The fertile Ibarra region of northern Ecuador has the potential to pro-

duce much more food. Development of the area is now being approached on a coordinated, regional basis, and two Volunteers have been assigned to the development agency, CORFORNOR. One, in Imbabura province, is the only agricultural specialist in the southern half of the region, and has his hands full in swine reproduction, crop rotation, horticulture and poultry projects. The other, in Carchi province, is busy with a pig center, soil analysis, potato experiments and sheep projects.

- The Indian State of Orissa has good soil and growing conditions and an able Department of Agriculture. Orissan farmers have made rapid progress with the use of fertilizers and high-yield varieties of rice, maize and wheat. The next step is farm mechanization. The State has already acquired a large amount of mechanical equipment, such as tractors, sprayers and tillers, for at-cost sale or rental

to farmers. However, the department's extension service has few agents who know how to put mechanical equipment to maximum use. Proper preventive maintenance techniques are all but unknown, so much of the equipment now lies idle. Volunteers assigned to the department are demonstrating to farmers how the equipment is used and what it can do, and are training extension agents and farmers in operation, maintenance and repair.

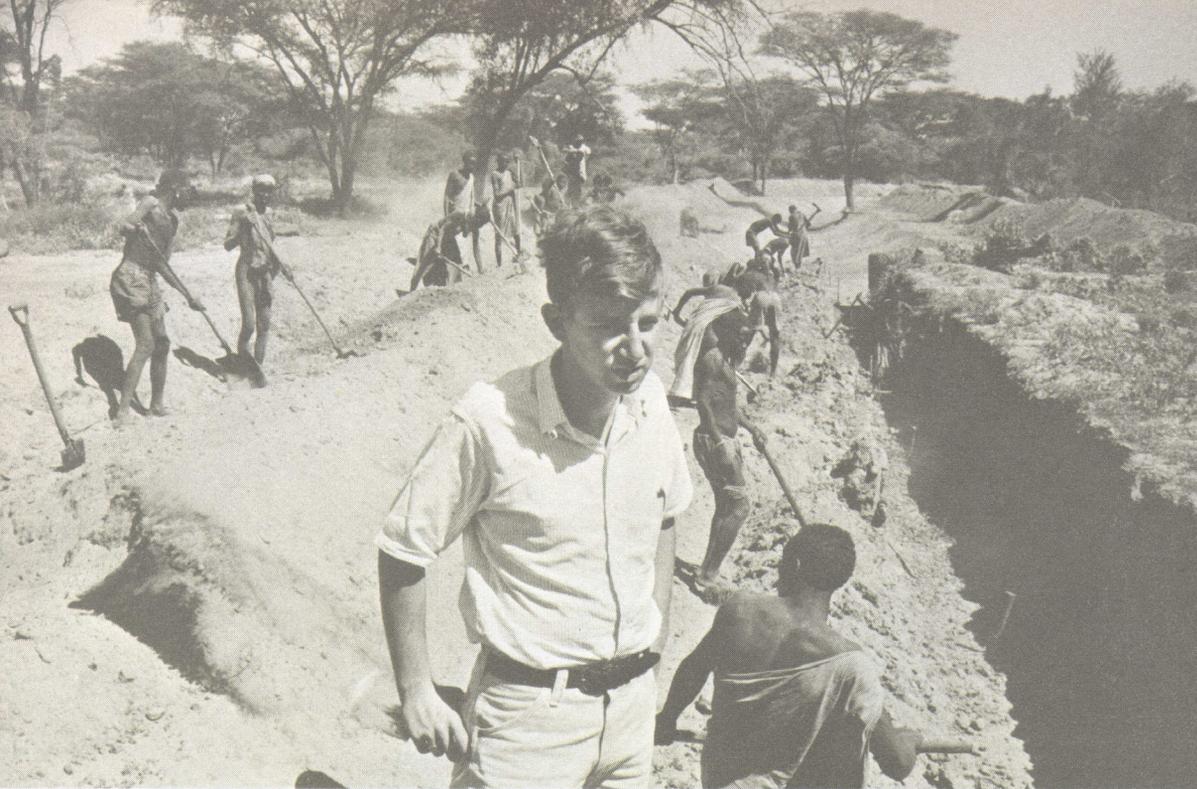
- Nomadic people of Somalia have few agricultural resources. The pastoral economy revolves primarily around the camel, though sheep, goats and cattle are also raised. Somali cattle are superior to those found in most of Africa and the potential exists for far greater production than at present. As part of Somalia's livestock development scheme, Volunteers with farm experience are organizing holding grounds and quarantine stations, are constructing and demonstrating dips and are coordinating regional vaccination programs.



*While husband Dennis works with the farmers, Luise teaches child care, cooking and nutrition to the new colonists, and holds school in her palm-leaf home. For food, the Wheelers live off the land, fishing and hunting wild game.*



*Because the Wheelers' post is so remote—three hours by motorized dugout canoe from the nearest town—they must be jacks of all trades. They built a thatched-hut home like the one here which they are visiting.*



*Charles Saloway helps supervise construction of a two-mile-long irrigation canal to bring water to farmers in an arid area around Turkwell, a village near Lake Rudolph, Kenya.*

# FOR EXAMPLE...

## Letter to an Ag Grad—Postmark Bogota

**E**very agricultural program is different, so few generalities cover them all. But the following letter gives a fair picture of the scope of challenge an agriculture specialist can expect. It was written by Henry Jibaja, the Peace Corps agricultural program director in Colombia, to an agriculture graduate who was about to enter training.

Bogota, Colombia

Dear Mr. . . . . . :

The Peace Corps office in Washington has just sent us a note informing us that you have accepted Peace Corps' invitation for training, and that you have a B.S. in Agronomy. . . . If at the end of training you decide you still want to become a Peace Corps Volunteer, I will promise, or better I will absolutely guarantee you two years of work as challenging as you want to make it. Let me tell you about some of the work we are doing in Colombia right now.

Volunteers in the rural sectors work within the framework of an integrated

approach to the development of these areas. This program is called Rural Community Development and includes agricultural extension, cooperatives, literacy, health, nutrition, architecture-engineering and community action programs. In the past seven months the number of Volunteers working within the agricultural segment of this program has doubled from 80 to 155. This increase is the direct result of the realization by Peace Corps Volunteers that agriculture is the most pressing and immediate concern of the *campesino* (Colombia's poor farmer) and therefore offers the most direct chance for communication.

These Volunteers work at two levels. One is directly with the *campesino* to open and find new alternatives for his own self-help which he did not know were available to him before. This means we live with these farmers—learn their way of speaking Spanish, eat their own food, catch many of the diseases they catch. We

learn their point of view. All of these in addition to the Volunteer's role of extension agent.

At the second level, that of governmental agricultural agencies, we work directly with some of the world's greatest authorities on tropical agriculture. Colombia is fortunate in that its government has been responsive to rural and especially agricultural problems by creating a variety of special-purpose agencies. The Instituto Colombiano Agropecuario (ICA) is the national research, education and extension agency whose excellent research facilities were developed by the Rockefeller Foundation and whose extension service is now being developed by the University of Nebraska. Volunteers work literally at ICA's elbows.

The Instituto Colombiano de la Reforma Agraria (INCORA) is the national agrarian reform agency which is the model agrarian reform organization for the world. Fifty-three Volunteers are working with INCORA.

The Servicio Nacional de Aprendizaje (SENA) is a mobile agricultural education service which gives agriculture courses to *campesinos* on local crops and livestock. In the last three months, 32 Volunteers have organized *campesinos* to attend SENNA courses, and SENNA instructors say that the Volunteers' work is invaluable for a successful course.

The Caja Agraria is Colombia's bank for farmer credit; in addition to its financial functions it is charged with promoting the use of improved varieties and hybrids of seeds developed by ICA. The Caja Agraria has a national seed trial demonstration program which is run almost exclusively by 40 Volunteers. And so goes the list as Volunteers determine what agency offers the most relevant program for development of the *campesinos* in his region, then proceed to promote communication between the *campesino* and the agency that is there to help him become a productive element of the Colombian economy and a responsible member of the society.

Now I am going to tell you why you are so important to Peace Corps' efforts in agriculture in Colombia. Of the 155 Volunteers now working in agriculture, exactly ten have agriculture degrees. This means that those ten are the natural leaders of the local agriculture programs in their departments. They are looked to for leadership and advice from all levels of the Peace Corps organization here, and by the Colombians as well. Let me give you some examples of how agriculture Volunteers with degrees have put their training directly to work for the development of agriculture in Colombia.

Lee Foerster (B.S. General Agriculture, University of California, Davis) now is the department head of the ICA Extension Service in the Putomayo region of the Amazon River basin. Lee established the first agricultural extension service in Colombia under the new ICA program and is using his wits to test methodology and new ideas that will have an impact on all future extension agencies in Colombia.

Dave Hopper (B.S. Animal Science, Idaho), has tried to introduce ducks for egg and meat production in hot climates where chickens have a habit of dying. Dave's experiments have been related to ICA's research arm where the national organization will now assume investigative responsibility. His work has been a milestone

and promises major benefits if and when feeding rations are defined, diseases identified, and *campesinos* learn to fence the ducks in so the crocodiles can't eat them.

Glenn Warner (B.S. Agricultural Engineering, Iowa State) is one of the six agriculture engineers in all of Colombia. He has just taken charge of a

major irrigation project for INCORA.

Each of these Volunteers has found his education in agriculture in the U.S. to be directly applicable to the tropical conditions of Colombia. This is your challenge—your work. We want you here in Colombia and Colombia needs your skills and drive as a Peace Corps Volunteer.

*New Yorker David O'Connor teaches English and agriculture to primary students in Karfolk, Nepal. Here he instructs students in the school poultry pen.*



