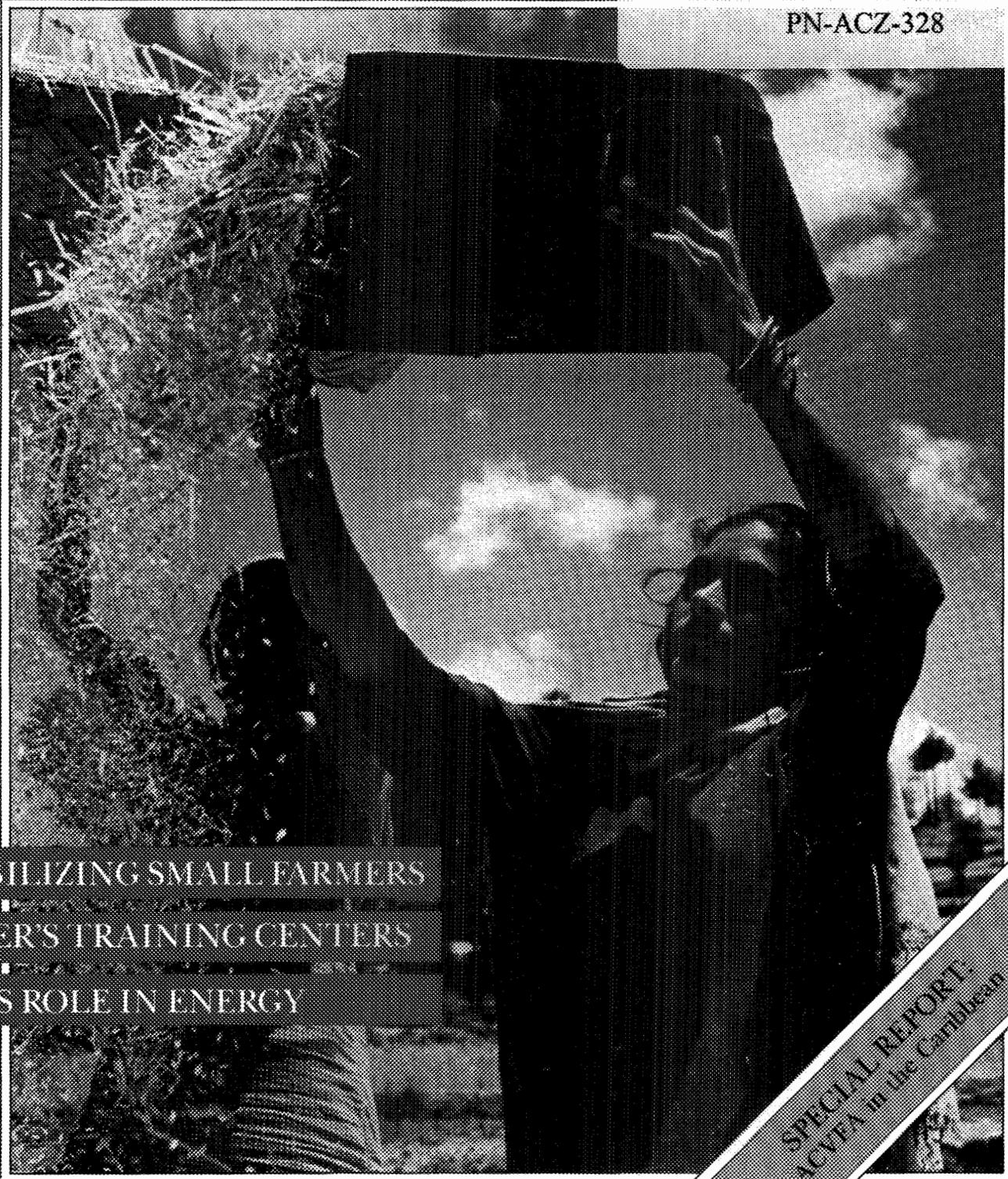


AGENCY FOR INTERNATIONAL DEVELOPMENT

MAY 1983

# HORIZONS

PN-ACZ-328



MOBILIZING SMALL FARMERS

NIGER'S TRAINING CENTERS

AID'S ROLE IN ENERGY

SPECIAL REPORT  
ACVFA in the Caribbean

AGRICULTURE

# HORIZONS

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Cover: Agricultural production of modernizing small farmers in East and Southeast Asia has climbed rapidly. The key to motivating small farmers to increase food production is making changes in their environment, in particular, changes in incentives, technology, education and infrastructure. Article begins on page 14.

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ACCENT ON



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# DEVELOPMENT

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**THE COST OF HELPING** other countries is modest and necessary, said Secretary of State George P. Shultz. "Every American must understand that it's necessary to spend a fraction of our collective resources to secure our most precious goals of freedom, economic well-being, and peace," Shultz said. Speaking in Atlanta, he pointed out that Americans pay more than twice as much for soap and cleaning supplies during a given year than they do for military and economic assistance. The total cost per person in tax dollars each year for U.S. security and economic assistance programs in developing countries is \$43.91. (Derived by dividing the fiscal 1984 budget request for development assistance, Food for Peace, economic support funds, military education and training program, military assistance and foreign military grants by the U.S. population; the figures do not include foreign military sales guaranteed loans which by law are not included in the U.S. budget.) Shultz gave examples of how that total is spent: for building peace in the Middle East—\$12.35 per person; for the Caribbean Basin—\$3.84 per person; for curbing population growth—\$.92 per person; for building secure food supplies—\$3.15 person.

By contrast, he said, Americans spend on an average \$104 per person each year for TV and radios, \$35 at barbershops and beauty parlors, \$97 for soap and cleaning supplies, and \$21 for flowers and potted plants.



**THE BELIEF IN MANY TRADITIONAL SOCIETIES** that sons are better than daughters is widespread in some parts of South Asia. Sons are valued as economic assets, daughters as liabilities. Sons do not come with dowry obligations; they help out on the farm and provide for their parents in their old age.

In many cases, the result is neglect of female infants, and children, sometimes with fatal consequences. Taking a close look at this issue in India is Barbara Miller's book, *The Endangered Sex: Neglect of Female Children in Rural North India*. It is reviewed by Maureen Norton on page 37 of this issue of *Horizons*. The book's author is Senior Research Associate at the Local Revenue Administration of the Maxwell School of Citizenship and Public Affairs, Syracuse University. The reviewer is head of evaluation for the Office of Development Planning in AID's Bureau for Asia.



**A BITTER SEED TO SWALLOW** may help improve nutrition in developing countries. Plant proteins are important for good nutrition, but in some countries cultural food selection crimps use of available protein sources, says John P. Cherry, a scientist at the U.S. Department of Agriculture's Southern Regional Research Center. Cherry says diets could be improved by using more indigenous high-protein foods. He and E.N.T. Akobundu, who currently lives in Nigeria, studied the nutritional and chemical properties of the egusi seed as a vegetable protein source. The seed samples came from a local market in Nigeria. Grown only for its seed, egusi is a bitter-tasting, melon-type fruit about the size of a cantaloupe, according to USDA's *Agricultural Research*. Analyzing defatted flours, Cherry found high levels of nutrients, oil and proteins. Using egusi seed flour as a source of calcium and niacin could improve diets considerably in regions of Southern Africa where little milk is consumed but egusi cultivation thrives.

For more information, contact John P. Cherry at the Southern Regional Research Center, PO Box 19687, New Orleans, LA 70179.



**A COMMON OCCURRENCE IN** developing countries is that facilities or services break down or aren't running at capacity because they are not maintained properly. The Organization for Economic Cooperation and Development's Development Assistance Committee (DAC) has adopted guidelines to encourage member countries to focus more on the problem of adequate maintenance—usually given low priority by both donors and developing countries. What contributes to inadequate maintenance? Lack of technical expertise and training to service and repair the installations; no working capital to cover costs of fuel, raw materials and technical staff; and limited budgetary resources and/or foreign exchange to buy imported spare parts and to finance salaries and supplies. On the donor's side, there may be inadequate project design, overly optimistic assumptions about recipients' capacity to pick up operating and maintenance costs, use of inappropriate technology or premature withdrawal of aid.

Coming to grips with the maintenance problem also means helping developing countries address policy and institutional weaknesses that undermine their ability to bring technical and financial resources to bear, according to the *OECD Observer*. Third World institutional capacity should be strengthened to:

- appraise and program recurrent costs in national budgets and development plans;
- assess claims on current budgetary resources and allocate funds according to agreed priorities;
- design public services so they are consistent with the government's and citizens' ability to pay for them; and
- encourage local participation; identify and delegate maintenance responsibility at the grassroots level.

These guidelines are an addendum to guidelines on local and recurrent cost financing adopted by the DAC in 1979. They can be obtained from OECD, Chateau de la Muette, 2, rue Andre-Pascal, F 75775 Paris, France.



**KASHMIR BEER?** Several hundred farmers from Kashmir have switched from growing apples to hops, and are faring quite well by the change. An Indian government decision to ban the import of hops; a strain, suited to local conditions, developed in the mid-70s by the regional research laboratory at Srinagar; a bout of apple scab, and stiff competition in apple

production from neighboring Himachal Pradesh are combining to trigger the conversion of apple orchards to hopyards.

Brewers were initially turned off by Kashmir hops because they were more bitter—8% to 10% of alpha acid—than other varieties on the world market, which have 2% or 3%. Alpha acid, known as "the hopping rate" in brewers' jargon, is the vital ingredient in making beer, reports the FAO publication *Ceres*. With the high hopping rate came increased bitterness in the beer's taste. Brewers began to reconsider when several internationally known hop scientists pointed out that proper application could actually reduce the total amount of hops needed, resulting in savings to the brewers.



**AGRICULTURE AND INDUSTRY**, the growth of each is linked to the other, according to C. Rangarajan's *Agricultural Growth and Industrial Performance in India*, Research Report No. 33 published by the International Food Policy Research Institute. The five major links are: agriculture uses industrial products like fertilizer, tools and machinery; agriculture supplies the raw materials for agriculture-based industries; rural families demand industrially produced consumer goods; agriculture influences industry through government savings and investment; and fluctuations in the terms of trade between agriculture and industry affect private corporate investment and household savings and investment.

The study found that while annual rise and fall in industry and agriculture vary widely, general movement—over five year periods—seems to be related. The study also created a model, breaking down the links into three groups—production, demand, and savings and investment. The author concludes from five simulations that a 1% increase in agriculture generates a 0.5% increase in industrial growth.



**SOUTH AMERICAN CAMELIDS**—alpacas, llama, vicunas, and guanacos—will soon become the speciality of a central information center that will organize, channel and disseminate information about them at national and international levels. Writing in *IDRC Reports*, Stella De Feferbaum explains raising camelids, mostly by small farmers, is plagued by health, nutritional and management problems. Overcoming

these problems would protect vicunas and guanacos—endangered species—and would mean better standards of living for rural communities, who rely on raising llamas and alpacas for their livelihood.

Two institutes, the Wool Promotion Institute (INFOL) in Bolivia and the Institute for Tropical and High-Altitude Veterinary Research (IVITA) in Peru, individually approached Canada's International Development Research Center (IDRC) with research proposals on camelids. IDRC suggested they join forces to establish a camelid center. INFOL, a multinational information center on camelids, specializes in research in production, marketing and industrializing camelid products and by-products. The center's director, Armando Cardozo, also has compiled a three-volume bibliography on camelids. IVITA is one of three research centers at the San Marcos University in Lima, Peru. Research is conducted there and at field stations on camelid biology, parasitic diseases, the physiology of digestive processes and reproduction in alpacas. AID supports some of IVITA's programs involving camelids as well as sheep in several sites throughout Peru.



**CHILDREN IN ZIMBABWE** have a new magazine with an unusual name: *Ants*. Produced in Zimbabwe and published in the country's three official languages—Shona, Ndebele and English—the magazine promotes the exchange of culture and ideas in the racially mixed country. The name was chosen because of the cooperative nature of the tiny ant. Letters, puzzles and drawings sent in by children fill most of its pages, with the final selections chosen by the editorial board: an 11-year-old, a 12-year-old, two "senior" advisers who are 14, and a graphic artist. *Ants* is financed for its first year by Canada's Overseas Book Center as part of its program to support indigenous publishing in developing countries. Even at its newsstand price of 15¢, the organizers believe the magazine will be self-sufficient in a year.



**TELEPHONES** are not necessarily only an outcome of economic growth, but also can be a pre-condition of it. However, two-thirds of the world doesn't have telecommunication services, mainly because of high installation costs. But recent studies by the International Telecommunication Union (ITU)—lead agency for

the 1983 World Communications Year—show wider economic benefits that are worth 10 times the phone's cash return.

The scope of the U.N.-designated year goes beyond telephones. Sub-titled "Development of Communications Infrastructures," the year aims to increase communications' breadth and effectiveness as a force for economic, cultural and social development. Recognizing its multiplier effect on all development activities is the keystone. It aims to increase awareness of new technologies, and promote development of rural communications and encourage all countries to review their policies on communications development to speed up the process.

In addition, activities are directed towards ensuring proper coordination as communications infrastructures are established: informing planners, decision-makers and the public about the opportunities offered by the new techniques and systems; mobilizing national and international resources for accelerated communications development, and proposing a global communications policy within the context of national and international development strategies, according to Richard E. Butler, secretary-general of ITU.



**AS THE INTERNATIONAL DECADE** for drinking water and sanitation enters its third year, the "pay-off" is beginning to be seen, says G. Arthur Brown, UNDP deputy administrator and chairman of the U.N.'s steering committee for cooperative action. He presented evidence to the U.N. General Assembly:

- By mid-1982, 50 developing countries had established inter-ministerial National Action Committees for the Decade, to set targets and policies for drinking water and sanitation development.
- National planning workshops were held in 25 developing countries to come up with approaches and resources to meet the targets. Timetables and responsibilities were set for preparing full national Decade plans.
- Ten of those countries held a second workshop to endorse an official plan and 10 others drew up plans using other methods.
- A sample survey of 12 countries' plans show a planned average rate of increase 1.5 times higher for water services and nine times higher for sanitation services than the rate reached during the 1970s.
- Total investment in improved drinking water and sanitation systems for 1981 from all sources

was about \$10 billion, compared to \$7 billion in 1978.

• Additional funding for further Decade progress is on the horizon. Two hundred and thirteen projects, costing a total of almost \$3.9 billion, have been entered by 50 countries into the Decade's "Project and Program Information System" operated by the World Health Organization. These projects are being considered for funding by 17 bilateral and 25 international financing agencies.



**TIED RIDGES** help increase maize yields by reducing the stress of drought on the crops during the growing season in Upper Volta, reports the International Institute of Tropical Agriculture (IITA). Tied ridges are either rows connected laterally by other ridges or earthed-up rows. By connecting the ridges, a series of miniature catch basins is formed that holds rain-water around the plants. IITA found that tying all ridges gave higher crop yields—at least double except in hydromorphic soil—than tying every other furrow or not tying them at all.

The IITA report suggests farmers plant first and "earth-up" later or plant directly on tied ridges. Ridges last more than one season in some soils.

Contact IITA, Oyo Road, PMB 5320, Ibadan, Nigeria for more information.



**WORLD TRADE IN SPICES** is on the rise, more than doubling in value and increasing in volume by one half since the early 1970s, according to *Spices: A Survey of the World Market*, a two-volume report issued by the International Trade Center (ITC). ITC is the United Nation's body for technical cooperation with developing countries in trade promotion. Over 300,000 tons worth \$750 million were traded in 1980. Developing countries account for a major portion.

ITC's spice development program has many aspects. It provides developing countries with a continuous flow of market information through a telex service, carries out technical cooperation projects to benefit small-scale farmers in developing countries, and promotes international cooperation to expand trade in spices. Spice marketing seminars for exporters in developing countries to discuss export opportunities and specific marketing problems are funded by the Canadian International Development Agency.

Traders and trade-related organizations in

developing countries can get free copies of the two-volume report by writing ITC, Palais des Nations, 1211 Geneva 10, Switzerland.



**POCKET "DOC":** A micro-laboratory, the size of a pocket calculator that analyzes blood and urine samples has been designed by Appropriate Technology, a British private and voluntary organization, to boost medical services in remote rural areas. A two-part kit—a box of labelled chemicals and a preprogrammed micro-computer—makes up the laboratory. A drop of blood or urine, when combined with the correct chemical, changes color. The operator uses the micro-computer, reports *South* magazine, by answering a series of yes or no questions, to get a chemical analysis.



**DISASTER PREPAREDNESS INFO:** For a list of pharmaceuticals essential during relief efforts immediately following natural disasters, or general information on medical supply assistance, write the Pan American Health Organization (PAHO), 525 23rd Street, NW, Washington, DC 20037 and ask for Issue 14 of *Disaster Preparedness in the Americas*. It's PAHO's newsletter that reports on events, activities and programs in the field. The newsletter is partially funded by AID's Office of U.S. Foreign Disaster Assistance and the Swedish International Development Authority.

In addition to book reviews and a bibliography, the newsletter lists publications available to health professionals and others involved with various aspects of disaster relief and preparedness programs. Publications noted in this issue, for example are:

- A manual for Red Cross delegates in the field available from T. Konoe, Director, Disaster Preparedness Bureau, League of Red Cross Societies, PO Box 276, CH-1211, Geneva 19, Switzerland.

- Technical papers presented at a course on natural disasters and sanitary engineering by the Regional School of Environmental Engineering, contact the PAHO Sanitary Engineer, Area III, Apartado Postal 383, Edificio Etisa, Plazuela Espana, 7a. Avenida 12-23, Zona 9, Guatemala City, Guatemala.

- A publications catalog (FEMA-20) of the U.S. Federal Emergency Management Agency, available from FEMA, PO Box 8181, Washington, DC 20024.

# AID BULLETIN

## AID Budget Sent to Congress

Throughout March and April, AID Administrator McPherson and the Agency's assistant administrators testified before numerous congressional committees on AID's proposed fiscal 1984 budget.

The budget, as presented, reflects an 8.3% increase in funding for the AID programs in fiscal 1984 over the levels provided by Congress in the fiscal 1983 continuing resolution (CR).

The \$4.8 billion 1984 appropriations request exceeds the 1983 continuing resolution amount by \$370.5 million, with major gains planned for the functional development assistance accounts, the Economic Support Fund (ESF), the Sahel Development Program and operating expenses.

In addition, the President asked Congress to enact \$305.6 million in supplemental appropriations in 1983 for ESF, operating expenses and the Foreign Service Retirement and Disability Fund.

Over half, or \$150 million, of the ESF portion of the supplemental request (\$294.5 million) would fund the reconstruction program in Lebanon, with the balance going to the Caribbean Basin Initiative and other programs. The operating expenses supplemental request is for \$9.9 million and the retirement fund would receive an additional \$1.1 million.

Within the context of the Administration's attempt to

limit the growth of federal spending, the AID requests for 1984 appropriations and accompanying 1983 supplementals represent a continuing commitment by President Reagan to maintain a level of bilateral economic assistance sufficient to achieve critical U.S. foreign policy objectives.

The 1984 request for the functional development assistance accounts is \$1.342 billion, up from \$1.298 billion in the 1983 continuing resolution. Among these, the largest percentage increase—30%—is for the selected development activities account (SDA), reflecting the Administration's emphasis on strengthening private sector activities that will improve growth and income-producing oppor-

tunities in LDCs.

Almost 40% (\$72 million) of the SDA request of \$182.4 million would support activities to foster private enterprise development.

The Bureau for Private Enterprise (PRE) would get \$18.7 million, with another \$53.3 million planned for other AID bureaus to encourage such initiatives. The PRE funds would be used for activities such as investment packaging and technical assistance.

In addition, a new Private Sector Revolving Fund would be established with up to \$20 million in fiscal year 1984. The fund would finance private enterprise initiatives and would generate loan repayments, return of capital and fee income for redeposit in the revolving fund. As the initial appropriated funds

are repaid, the fund eventually would consist entirely of unappropriated funds.

The SDA request also would provide \$33 million to support PVOs and \$10 million for the science and technology program.

Finally, SDA funds LDC efforts to plan and carry out sound energy, natural resources and environmental policies and helps improve LDC capability to provide basic services to the urban poor and displaced persons.

The education and human resources development account (EHR) request of \$121.5 million represents the second largest increase (17.3%) of the functional accounts.

Approximately 25% of the request would support programs in Latin America and the Caribbean, particularly in job skills training, as well as continued efforts to improve the efficiency of primary schools and the preschool learning environment. About 30% would support programs in Africa, where all levels of education and training systems are generally inadequate.

And 22% of the funds would go to Asia and the Near East, with the remainder supporting central bureau programs, including basic education, research and technical training and educational technology, such as the rural satellite program.

The 1984 budget proposes \$725.2 million—a 3.6% increase—for agriculture, rural development

## BILATERAL ASSISTANCE

(thousands)

	FISCAL 1983 CR	FISCAL 1984 REQUEST
Agriculture, Rural Development and Nutrition	700,000	725,213
Population Planning	211,000	212,231
Health	133,405	100,655
Education and Human Resource Development	103,550	121,477
Selected Development Activities	140,288	182,423
Science and Technology	10,000	(10,000)
<b>Subtotal, Functional Assistance</b>	<b>\$1,298,243</b>	<b>\$1,342,000</b>
Sahel Development Fund	93,757	103,000
American Schools and Hospitals Abroad	20,000	7,500
International Disaster Assistance	25,000	25,000
ES Retirement and Disability Fund	35,403	33,904
Operating Expenses	335,000	378,512
Economic Support Fund	2,661,000	2,949,000
<b>GRAND TOTAL</b>	<b>\$4,468,403</b>	<b>\$4,338,915</b>

and nutrition (ARDN). Although the largest allocation of ARDN funds would go to Asia, programs in Africa and the Caribbean are projected to keep up in relative growth.

Funds from ARDN also would be used to help LDCs with deforestation problems and to fund activities of U.S. land grant universities and other institutions under Title XII of the Foreign Assistance Act.

The request for the population planning account, at \$212.2 million, reflects a slight increase, as well. The program emphasizes providing voluntary family planning services and contraception for the poor through lay health workers and the private sector.

More than 80% of the requested funds would go to country programs, with the largest portion for Asia. The balance would be allocated to AID's centrally funded program which uses intermediary organizations to deliver worldwide family planning services.

Health is the only functional account for which the request is lower than the fiscal 1983 appropriation. The \$100.7 million proposal reflects a move away from costly infrastructure and related support for the physical expansion of health systems and a move toward improved program design and management, development of health programs that can be financed by

LDCs over the long run and increased biomedical research and field testing in LDCs.

The \$2.949 billion request for ESF is an increase of 11% over 1983. Slightly more than half of the total would go to Egypt and Israel. Although requirements for those two countries have remained constant, the need for significant amounts of assistance to counter current economic crises elsewhere greatly has increased in a number of strategically important developing countries.

Central American and Caribbean countries would receive \$398 million in ESF. This includes \$120 million in continuing support to El Salvador. The Asia programs would receive \$280 million, with \$225 million of this going to Pakistan. African country and regional programs would receive \$409 million. The balance would be divided between the ESF Special Requirements Fund (\$40 million) for unanticipated needs and major programs in Europe such as Turkey (\$175 million), Portugal (\$40 million), and country programs in the Middle East such as Jordan (\$20 million) and Oman (\$15 million).

Other development assistance line items that increased in the fiscal 1984 budget proposal were the Sahel Development Fund, at \$103 million—9.9% more than in 1983—and operating expenses. The latter account, requested at

\$378.5 million, increased 12.9% due to rising overseas costs, salary increases and other overhead.

Also, appropriations for the American Schools and Hospitals Abroad were proposed at \$7.5 million—down from the \$20 million appropriated in fiscal in 1983.

The International Disaster Assistance request of

\$25 million matches 1983's level. In addition, \$74 million of prior year funds available in fiscal 1983 were transferred to AID by the fiscal 1982 appropriations act, notably for the African refugee program and Lebanon relief. Of the transfer, \$7 million is projected to remain available in fiscal 1984 for the refugee program. ■

## Commission Reviews Aid Program

Secretary of State George Shultz announced the creation of the Commission on Security and Economic Assistance to review the purposes, programs and instruments of U.S. foreign assistance and recommend ways to better fashion and effectively use them. The 23 commission members include representatives of Congress, the executive branch and prominent persons from the private sector. The commission's chairman is Frank Carlucci, former deputy defense secretary and ambassador to Portugal, currently president of Sears World Trade.

"The commission plans to examine all present foreign assistance programs, security and economic, both bilateral and multilateral," AID Administrator McPherson told reporters at a briefing. Secretary Shultz has designated AID as the commission's support agency.

Georgetown University's Center for Strategic and International Studies (CSIS) has been contracted by AID, the Defense Security Assist-

ance Agency (DSAA) and private sources, to provide staff support. John Wilhelm, from AID's Africa Bureau, is staff director.

Two task forces have been formed to assure executive branch support for the commission and to keep Congress informed of its progress. One, chaired by Wilhelm, has representatives from AID, the departments of State, Treasury, Agriculture, Defense, and Commerce, and DSAA, National Security Council, Office of Management and Budget and the Peace Corps. Congressional liaison officers from the same organizations form the second task force, which will assure communications with Congress.

The commission's preliminary report is due in July, with its final findings and recommendations to be presented to the President, secretary of state and Congress by September.

Among areas the commission plans to examine are the foreign and domestic policy goals and objectives that are served by foreign

assistance and the impact of existing foreign assistance programs on these goals and objectives. They also will consider what budget resources are needed to meet them.

The commission will review the history of foreign assistance programs since World War II, examining the forms they took and how effective they were in reaching foreign policy goals and objectives. The commission also will assess the outlook for U.S. interests in the Third World into the next decade and implications for U.S. security and economic assistance programs and levels.

Since the beginning of major U.S. foreign assistance programs after World War II, every President has endorsed foreign assistance as an essential instrument of foreign policy supporting U.S. political, economic and security interests. But the programs have become increasingly controversial and support—public and congressional—for the full range of assistance has declined.

Public and congressional attitudes toward foreign assistance will be another area the commission will examine, including the evolution of these attitudes, current public perception of U.S. foreign and domestic interests and the relationship of foreign assistance to those interests. The commission plans to compare U.S. policies, programs and public support for foreign assistance with other donor countries and consider ways to broaden

support for foreign security and economic assistance.

The commission's co-chairmen are Lane Kirkland, president of AFL-CIO, Laurence H. Silberman, former ambassador to Yugoslavia, currently executive vice president of Crocker National Bank of San Francisco and Clifton R. Wharton, chairman of the Board for International Food and Agricultural Development (BIFAD), chancellor of the State University of New York system, and former president of Michigan State University.

Congress is represented on the commission by eight members. From the Senate Foreign Relations Committee are Sens. Nancy L. Kassebaum (R-KS) and Paul S. Sarbanes (D-MD). The House Foreign Affairs Committee is represented by Reps. Dante B. Fascell (D-FL) and Henry J. Hyde (R-IL). The appropriations subcommittees on foreign operations are represented by Sens. Alfonso D'Amato (R-NY) and J. Bennett Johnston (D-LA) and Reps. Matthew McHugh (D-NY) and Robert L. Livingston (R-LA).

Chairmen and ranking members of the relevant committees are *ex officio* members.

Public members include Nicholas Frederick Brady, chairman of Dillon, Read & Co. and a former senator from New Jersey; L. Dean Brown, president of the Middle East Institute and former ambassador to Jordan; Wallace J. Campbell, president of CARE; Robert B.

Delano, president of the American Farm Bureau Federation; Thomas A. Dine, executive director of the American Israel Public Affairs Committee; Edwin J. Feulner Jr., president of the Heritage Foundation; Amos Azariah Jordan Jr., vice chairman and chief operating officer of the CSIS and former acting undersecretary for security assistance; Admiral Thomas Hinman Moorer, former chairman of the Joint Chiefs of Staff and

former chief of naval operations; David Rockefeller, former chairman of the board and chief executive officer of Chase Manhattan Bank; Michael A. Samuels, vice president for international affairs, Chamber of Commerce of the United States of America and former ambassador to Sierra Leone, and Marina V. N. Whitman, vice president and chief economist of General Motors and former member of the Council of Economic Advisors. ■

## AID Funds Maintenance Training in Latin America

Two AID grants totalling \$500,000 recently provided to the Pan American Development Foundation (PADF) will provide training in Central America and the Caribbean.

Under a \$400,000 AID grant, PADF will establish a course in medical equipment repair in vocational schools in Costa Rica, Dominican Republic, El Salvador, Guatemala, Haiti, Honduras, and Panama. A severe shortage of trained maintenance and repair personnel has left up to 60% of the medical equipment not working in some of those countries. About 80% of those equipment problems can be rectified by preventive maintenance and troubleshooting. PADF will select instructors from vocational-technical schools in such fields as machinery, electronics, and refrigeration.

The second AID grant



of \$100,000 will help finance a pilot project to teach small farmers in the Dominican Republic to plant and harvest fast-growing trees on land with limited fertility. The project will start a tree nursery using fast-growing species and small container technology. The project aims to reverse the rapid denuding of the land caused primarily by farmers who chop down trees for fuel wood. Farmers will be encouraged to consider trees as a potential cash crop. The trees will not displace food crops. PADF will promote intercropping with food crops, such as corn and beans, when the seedlings are small. ■

## Volunteer Executives Troubleshoot for LDC Firms

by James F. Bednar

A senior executive from a U.S. shoe manufacturing company stepped up to the workbench in a Turkish factory. The workers watched him as he picked up the proper tools and, without saying a word in Turkish, skillfully finished a boot. Over the three months the American executive remained at the factory, the workers learned his method by watching, despite the language barrier. As a result of the American's visit, in three months the factory's product rejection rate fell from 40% to almost zero. At his departure, employees lined up to shake his hand, thanking him for his help.

Similar scenes in various businesses occur many times every year throughout the developing world.

The International Executive Service Corps (IESC), the AID-funded organization that sent the executive to Turkey, focuses on developing the private sector in Third World countries. But a recent AID audit of IESC by Jordan Baruch Assoc. concluded that in addition to being "exciting, workable, and economical," the IESC is "woefully underutilized."

Accordingly, over the next years, AID support of IESC—about \$5 million in fiscal 1982—will increase to expand the organization's programs.

Since 1965, the IESC has been matching the expertise of retired, volunteer executives with problems in Third World enterprises. They have completed over 8,400 projects in 72 countries.

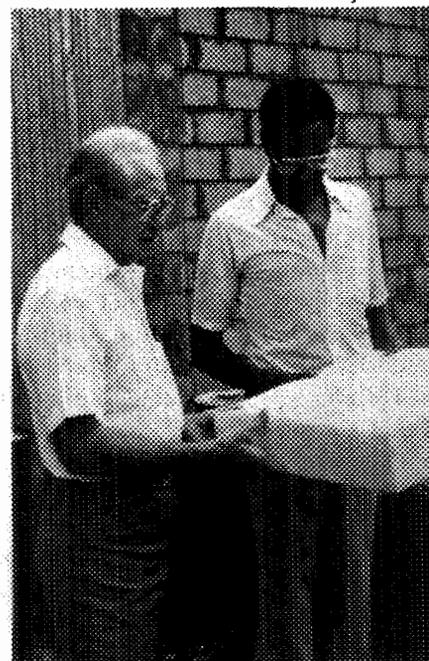
The IESC's support structure helps the volunteer succeed. It has 24 field offices, each headed by a

country director—usually a retired U.S. businessman with overseas experience. They arrange and negotiate contracts with clients which include private enterprise, government, educational or health institutions. The country directors help the volunteer from the initial work plan to the final report.

In a recent report on "New Directions" for IESC, Thomas S. Carroll, president of IESC, noted a renewed emphasis on selecting American "locals" as country directors. These are U.S. businessmen who have lived and worked in their IESC country for several years, who know the country, its people and their needs. In many cases, they already have established contacts and friendships in the local business community.

Jack Kandell, for instance, worked as a business executive in Mexico for 26 years before being appointed IESC country director there. He has been instrumental in establishing advisory councils in Mexico City, Chihuahua, Nuevo Leon and

*Former United Foam Corp. Vice President Albert Rhoton (left) helped modernize a St. Lucia mattress plant.*



Sinaloa—and works closely with all of them.

Another example of this new direction is Charles C. Rowley's appointment to country director in Honduras with additional responsibility for Guatemala and Belize. Rowley spent some 20 years of his career with major drug and cosmetic firms working and living in Latin America.

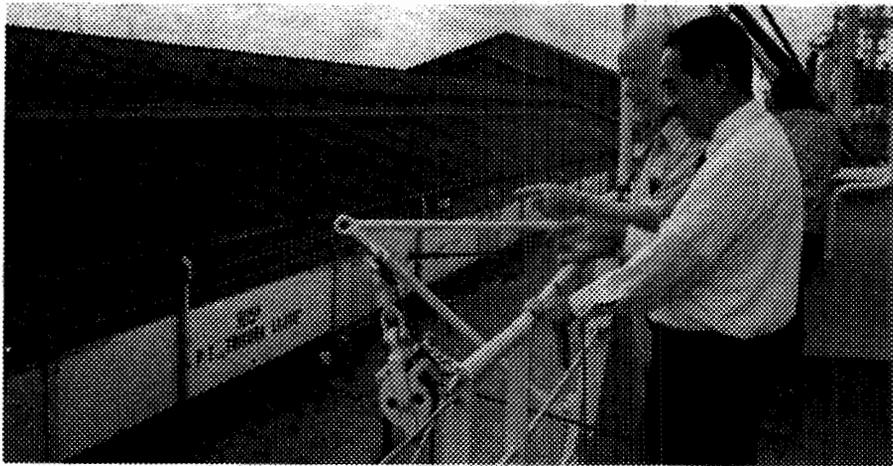
Other similar appointments include Henry Seymour, who was born in Panama and spent many years as an executive in Colombia, Mexico and the Caribbean area, named to IESC's Panama post; Leo Larkin, named country director in the Philippines where he spent about 30 years of his business career, and Jay Fernandes, named country director in Costa Rica after working as an executive in Costa Rica and Mexico for a number of years.

As part of its new directions, IESC is expanding its activities by using existing country directors and their staffs to supervise programs in neighboring countries. Country directors will be assisted by country representatives in each country served. They may be Americans in residence but more often will be host country nationals.

The country director chairs an advisory council of public and private sector representatives from the host country, which provides a local perspective of the country's development needs.

Once the need has been identified, IESC recruiters—20 retired volunteer executives—match the expertise needed with skills in the IESC bank which lists more than 8,000 volunteers. If an appropriate candidate cannot be matched with a need, the recruiters turn to their contacts in U.S. companies to "borrow" an executive to take on the mission. This can be particularly helpful when the client needs help with the very latest technology.

Hundreds of U.S. businesses have



*Retired shipping executive Murray Knabe advises ship owner Trihora Lloyl on management, finance and maritime law in Indonesia.*

provided IESC with volunteer executives. The companies are interested in both introducing U.S. business management practices abroad and in creating good will. The audit report notes that about 20% of the developing country enterprises assisted by IESC have established a business relationship with a U.S. firm.

Strong corporate support for the IESC is obvious in the number of active employees sent abroad over the years. Since 1964, over 33 companies have provided IESC with 10 or more volunteers. These are companies such as U.S. Steel which sent 65 volunteers, General Motors, 43, AT&T, 45, General Electric, 42 and Westinghouse, 38.

U.S. corporations also help fund IESC, with 150 acting as sponsors. Significant funding comes from the overseas clients which in 1981 accounted for 46%. AID provides just about half of IESC's annual budget.

But the benefits outweigh by far the costs. In interviewing entrepreneurs who have received IESC assistance, the auditors found over one-third made capital improvements based on the IESC's work. About one-quarter reported increased production and one-quarter improved product quality.

Jobs created by IESC's efforts are the most striking result, according to the audit. In 1980, for example, 34,000 new jobs were attributed to IESC's work. That amounts to \$147 per job created.

"No other program we know of—domestic or international—comes even close to that record," the auditors concluded.

But, they continued, for AID to use IESC's skills more, IESC must put more emphasis on AID's directions. This means less public sector support and more support for small- and medium-size businesses, with a sharper focus on meeting basic needs of the poorer nations.

The organization already has begun to move slowly in these directions, as demonstrated in the audit's analysis of IESC's clientele over the years. Since 1976, the proportion of government bureaus and facilities served decreased from 13.5% of the projects in 1976 to 4.9% in 1980. Banks, insurance and finance companies were down from 3.8% to .8%; health, education and welfare projects up from 1.9% in 1976 to 2.3% in 1980 and industrial promotion groups up from 3.8% to 4.5%.

Client size also changed. Clients with less than \$500,000 annual volume accounted for 18.7% of total

projects in 1980, compared to 15% in 1976.

"The larger firms are easier to sign up," the report says, "because they are, in general, better organized to use outside help."

The audit also noted an IESC trend away from the poorest countries toward the more developed of the developing. The auditors recommend improved organizational direction, a recommendation that AID has begun to put in place. According to AID's project manager, Roger Moeller of the Bureau for Private Enterprise (PRE), AID funds will be used to support projects in AID countries with relatively more emphasis on Africa and the Caribbean and upon agribusinesses and smaller enterprises.

Increased funding will enable IESC to field many more projects. The auditors estimate that each additional \$1 million spent on IESC's current activities will produce roughly twice the number of projects that each \$1 million of the first grant produced. This is because overhead costs are relatively fixed.

Working with AID, IESC is planning to reopen its program in Kenya, which also will provide assistance to Zimbabwe, Uganda and other countries in the region. IESC, at AID's request, also conducted an extensive survey of possible renewed activities in Jordan and Tunisia.

The auditors recommend that whenever regional funds are allocated, a portion be allocated for IESC volunteers. PRE is working with the regional bureaus to increase their use of IESC.

The auditors also suggested ways of expanding the program's impact. For example, they recommended that videotapes of volunteers in the field be shown at seminars. By dubbing in the appropriate language, the material could be offered throughout the developing world as a promotional tool. ■

*James F. Bednar is editor of Horizons.*

## Universities, Private Sector Working Together

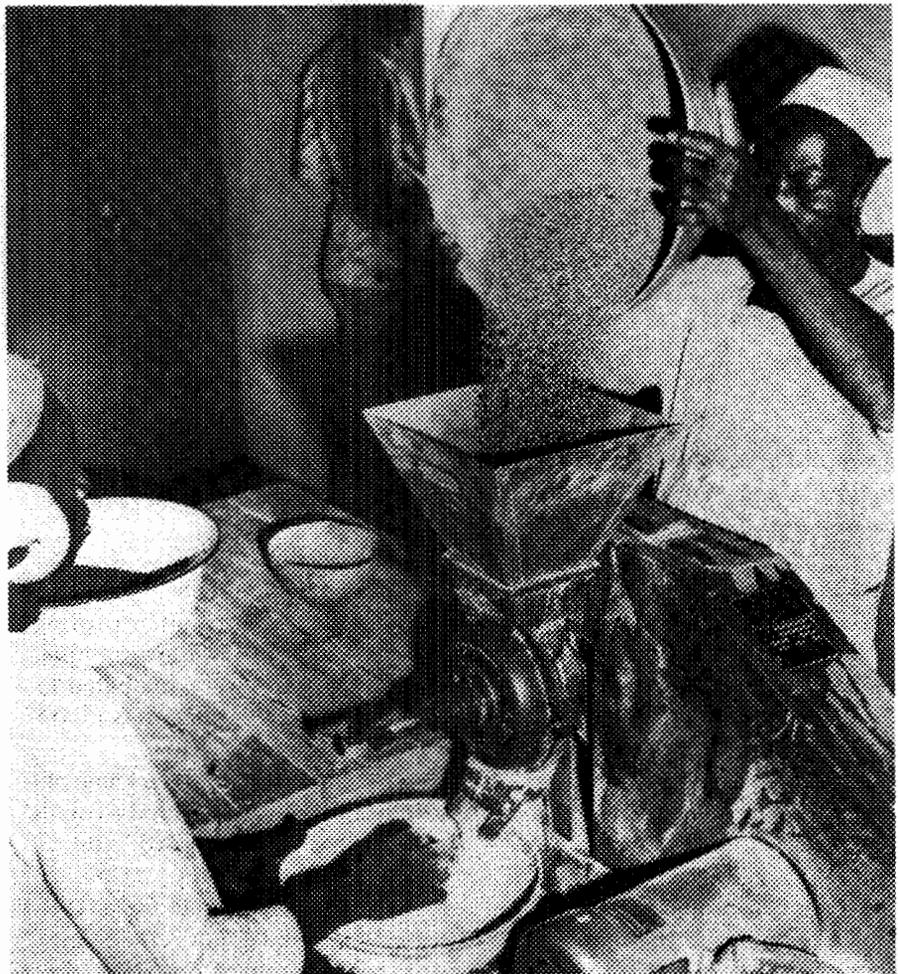
Universities can contribute to a working relationship with the private sector. Their wide range of specific expertise, respected neutrality, catalytic ability that brings different groups together to reach a goal, intellectual understanding and a service-oriented attitude to the development process are among their strengths.

What can the private sector contribute? Organizational and administrative talent, expertise to get the job done and done on time, accountability, and direct experience that fits the project and can be used in other projects.

These suggestions were made by participants at a recent Board for Food and Agricultural Development meeting (BIFAD). Discussants honed in on points raised by Ralph Smuckler, Michigan State University's dean for international studies, who reported on ways to facilitate university-private sector cooperation to meet the needs of developing countries. Smuckler also serves on BIFAD's joint committee on agricultural research and development.

To stimulate better cooperation Smuckler suggested the following processes:

- identify projects that would genuinely benefit from university-private sector cooperation and "assure against misfits in project awards";
- keep universities and private sector agencies fully informed on potential cooperative ventures as they develop;
- assure better understanding of each others' problems, processes and potential; and
- generate new "boiler-plate" contracting procedures and documents to facilitate cooperative projects. ■



*Lincoln University project aims to improve Upper Volta's grain marketing and distribution system.*

## Lincoln University Launches Major Overseas Project

Lincoln University, an 1890 land grant institution in Missouri, signed a contract late last year with AID and the South-East Consortium for International Development to carry out a technical assistance project in grain marketing in Upper Volta. Lincoln takes the lead in the project which is the university's first major overseas venture.

The two-year, institution-building project is designed to help the Upper Volta National Cereals Office

(OFNACER) improve its efficiency and management capability, leading to more efficient grain marketing for Upper Volta.

Specific goals are to provide food security—especially in grain deficient areas and during the pre-harvest season—by improving grain marketing and distribution; assist OFNACER in developing an effective pricing and distribution system; determine ways to integrate the private sector into the national grain marketing system; help OFNACER coordinate its activities with the necessary support systems such as storage and transportation; and provide planning and financial accounting training and supervision to local employees. ■

## Warning: Handle With Care

In the highland region of Ecuador, farmers routinely mix chemicals in large drums using their bare hands or sticks. Women wrap insecticides they purchase in newspaper and place the package in baskets next to vegetables wrapped the same way. Farmers clean their sprayers in irrigation ditches that carry the water used for drinking, cooking and washing in homes downstream.

According to "Pesticides and Peasants: They Don't Mix," a study by Peter Gore, Paul Davis and Thomas Sleight that looks at the use of agricultural chemicals by small farmers in parts of Ecuador, there are a number of explanations why small farmers are negligent when they handle toxic chemicals: The technology is too new, most farmers can't read, they don't realize the possible dangers of chemical poisoning and don't realize that some chemicals can be absorbed just as easily through the eyes or skin as by breathing or ingesting; they feel they will be scorned or lose their "macho" image if they handle chemicals too gingerly.

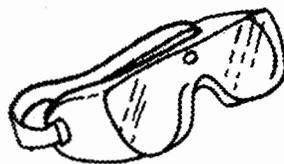
One remedy for the situation—along with more education—is to label each package with a standard pictorial warning symbol. The symbols would be used by all major agricultural chemical manufacturers.

Gore, an associate professor at the State University of New York's Institute for Man and the Environment, recently received a \$17,000 grant from the AID-funded, university-affiliated Consortium for International Crop Protection (CICP) to develop and field test symbolic labels and try procedures for marking pesticides in developing

countries. Commercial artists are working independently to illustrate storage, toxicity, mixing and container disposal and 13 other procedures. Designs will be selected by a panel of development professionals

with field testing expected to begin this summer.

Gore is open to suggestions for improving his system. He can be contacted at SUNY Plattsburgh, Miner Center, Chazy, NY 12921. ■



# LESSONS LEARNED

## Land Reform in El Salvador

by James F. Bednar

Land reform is difficult to carry out under the best of circumstances. But in El Salvador, where circumstances have been less than ideal, land reform is "working successfully," according to an AID-contracted evaluation. AID has provided seed, credit, technical assistance and other support to the beneficiary farmers. The program's success is a vital part of the Salvadoran government's economic and social reform program. Its success also undercuts the appeal of the guerillas in rural areas and therefore plays a major role in the political stabilization of the country. In scope and numbers of people affected, the program compares favorably with the highly successful U.S. supported agrarian reform programs in Japan, South Korea and Taiwan in the post-World War II period.

The evaluation was carried out by Checchi and Co., a firm with extensive experience with El Salvador's land reform program. The Checchi team went to El Salvador in late 1982 with "the impression from U.S. newspaper accounts that the conservative coalition that won the March 1982 elections had attempted to, in effect, annul the reforms."

By the conclusion of their six week stay in El Salvador, members of the team found "somewhat to their surprise, that the reforms, despite an ongoing civil war, were still very much alive, and that significant further progress had been made. . . ."

During the 1981-82 crop year, area cultivated and production levels of most crops were somewhat below the averages for 1975-80, but the study team concluded that "the implementation of agrarian reform does not appear to have reduced average productivity in either the



*Farming families are benefiting from El Salvador's land reform program.*

reform or non-reform sector." This stability of yields in the reform sector, the team notes, "is amazing, in view of the violence and guerilla warfare that plague much of El Salvador."

Projections for the 1982-83 crop cycle indicate higher yields and greater area under cultivation. Whether these are attained will depend on the level and extent of rural violence, market prices, weather and the availability of inputs, credit, and technical assistance, the report notes.

Except where guerilla activity has forced beneficiaries to abandon farms, employment is up somewhat over previous levels.

"If peace is restored," the evaluation says, "Salvadorans will soon increase exports, replace food now being imported from Guatemala, and develop food processing and other agribusiness ventures."

The land reform program has three parts. Phase I of the program applies to all land holdings larger than 500 hectares (1,235 acres) for a total of 224,417 hectares (554,310

acres). When the net of the reserve right claims which have been made are subtracted, the amount of affected land under Phase I is 206,000 hectares (508,820 acres) which is slightly less than 15% of the total agricultural arable land area. The former large agricultural estates over 500 hectares have been transformed into some 300 cooperatives. About 30,000 former *hacienda* workers and landless laborers have benefited.

The study team interviewed some Phase I beneficiaries who almost all said they were better off than before the reforms. They split about evenly on the question of continuing to produce cooperatively or dividing the land into individual plots. They also had mixed feelings about the present system of joint cooperative-government management.

Nearly 30% of the expropriated land has been paid for in cash bonds, equivalent to about \$100 million. Another 24% has been appraised and is awaiting available cash. The remainder are cases in which the owner is disputing the land value appraisal.

The evaluation team reports the agrarian bonds, which were described as worthless paper six months ago, are being actively traded at 42%-75% of face value. Just over 1% of all bonds issued to date have been redeemed as payment of gift and death taxes. Interest coupons can be used to pay all taxes, at face value and are selling quickly at about 95% of denominated value.

Over 75% of the production loans made to Phase I cooperatives in 1980-81 have been repaid. That is better, the report notes, than other Latin American land reforms and better than the repayment record of non-reform private landowners in El Salvador.

The Salvadoran government, with AID support, has launched a major effort to improve the management of Phase I cooperatives, by training

farm managers and accountants. The team also was "well-impressed" by a grassroots program called CODIZO, in which representatives of each cooperative in a geographic area meet weekly to learn simple cost accounting and talk about common problems, needs and to find solutions.

Phase II of the land reform program is aimed at approximately 1,800 people, each owning 100 to 500 hectares (247 to 1,235 acres). In the evaluation team's opinion, the Salvadoran government "has its hands full with the present task," and should not take on Phase II responsibilities. As an alternative, the team sees "considerable merit," in allowing persons owning 100-200 hectares (247 to 494 acres) to sell land privately, while requiring those with 200-500 hectares (494 to 1,235 acres) to deal with the agrarian agency in charge of Phase II.

Phase III permits eligible renters and sharecroppers to apply for title of the land they directly cultivate, up to a maximum of seven hectares (17.3 acres). Thousands of former renters and sharecroppers, who previously had little chance of owning their own land, have benefited. Over the last six months, title applications under Phase III of the

land reform program have increased dramatically.

By the end of February, over 48,000 farmers had applied for land titles—a 72% increase from March 1982. The report also notes "significant progress" in improved performance in the compensation of former land owners and the issuance of provisional and definitive titles to eligible beneficiaries.

The report offers several explanations for the recent dramatic increase. Before the March 1982 elections, about 30,000 applications had been received. But after the elections, that rate fell almost to zero and landowners reportedly evicted about 4,800 tenants in retaliation for having applied.

But in May the Salvadoran military announced its full support for Phase III and have now reinstated some 3,700 beneficiary families who had been illegally evicted from their lands.

And recently, the Constituent Assembly extended the deadline for *campesinos* to file for land title under Phase III to the end of the year.

Credit for the dramatic improvement of Phase III also goes to the head of the program—widely respected Colonel Galileo Torres. In October, mobile teams began going into

heavily populated areas to inform people about their rights under the program, instead of waiting for *campesinos* to come to department capitals. The pace of applications picked up, with the teams signing up more than 9,000 tenants by December.

"Appraisal, compensation and titling appear back on track," says the evaluation team. While the managing agency needs more budget funds and the titling process needs streamlining, the team found a "refreshing lack of dogmatism about individual farming and production cooperatives."

The evaluation includes a series of recommendations all of which are being carefully reviewed by the Salvadoran government and AID. The report recommends a number of changes in policies and procedures to enhance the effectiveness of the agrarian reform. AID already has begun to take part in some recommendations, such as simplifying the legal procedures of granting titles.

To obtain a copy of the evaluation *Agrarian Reform in El Salvador* contact the Office of Development Information and Utilization, AID, Room 215, SA-18, Washington, DC 20523. ■

*James F. Bednar is editor of Horizons.*

*Former large agricultural estates have been transformed into cooperatives, benefiting about 30,000 farmers.*



# MOBILIZING SMALL by M. Peter McPherson, AID Administrator FARMERS

Creating a productive  
environment to meet world  
food needs



Small farmers can make a very important contribution to meeting the world food crisis. Many of them are already doing so. The question is how can the small farmer be motivated to increase food production?

The environment in which the small farmer operates is the key.

When referring to small farmers, the definition of "small" varies from country-to-country and even among regions within countries. It depends upon such factors as type of activity, soil quality, and availability of arable land relative to the size of the labor force. For example, a "small" cattle ranch is likely to be larger than a "small" strawberry farm. Americans think of a small farm as less than 50 acres. But, in the less developed countries (LDCs), a small farmer typically has less than 10 acres of land, often fragmented into smaller holdings. But one fact stands out very clearly: small farmers the world over tend to be as productive if not more productive per acre than large farmers. And they can be more productive than they are now.

How have industrial countries been so successful in agriculture? Professor Theodore W. Schultz, the Nobel Prize-winning economist, has written at length on this subject. He says that a common element in these success stories was the dominance of owner-operated farms—farms free to respond to the incentives of the market. Schultz stresses the importance of owner operation over absentee ownership. A farm's successful operation requires knowledge of constantly changing biological and climatic conditions. Decisions have to be made on location if they are going to be right.

In contrast, the "very essence" of state-owned farms is that some basic decisions are made under absentee conditions. The miserable failures of state-owned farms in Communist countries is evidence for Professor Schultz' observations.

But Schultz also identified another critical factor explaining agricultural progress: investment in improved



*In Colombia, many campesinos own and operate small farms which play an important role in Latin America's agricultural progress.*

agricultural technology. For Schultz, investment includes research to develop new technology, and education of farmers to apply new technology.

What does all of this have to do with LDC small farmers and the world food problem? It is true that Schultz draws heavily on the experience of developed countries, especially the United States. The "take-off" in U.S. agricultural productivity did not occur until the application of major technological breakthroughs, especially hybrid seeds in the 1920's and 1930's.

In the United States, there also were earlier major investments in physical infrastructure, especially roads and railroads, and in institutions for research, extension and education. For example, our system of agricultural education and research began with the establishment of the state land grant colleges and the U.S.

Department of Agriculture in 1862. This was followed by the Hatch Act of 1887 to support state agricultural experiment stations and the extension of U.S. government support in 1890 to selected black institutions in southern states such as the Tuskegee Institute. An established body of property law gave U.S. farmers secure tenure on their land. Research results and sound economic policies also were essential.

These U.S. experiences have quite a bit to say to LDC small farmers and the world food problem.

The typical LDC small farmer and his family constitute almost a quarter of the total LDC population and one-fifth of the world total. In Asia and Latin America, the small farmer may well be an owner-operator, but there is also a good chance he will be a renter or sharecropper. In sub-Saharan Africa, the chances are high that the small farmer will practice

shifting or slash-and-burn agriculture under a communal or tribal arrangement.

Regardless of the region, the security of land tenure will vary depending upon the application of tenure laws and traditions in the face of population and other pressures.

The typical LDC small farmer is poor, very poor by world standards, with an annual family income below \$500. Many of the small farmers are women. They perform field tasks and often have total farm responsibility because men have left the farm to seek urban jobs.

Production may consist of a number of crops, deliberately diversified to minimize risk. Yields are often low and traditional seeds, tools and practices are used. A major share of production is directly consumed by the farm family.

Under these conditions, as many

as one in three or four of these farmer's children may die by age five and the others are likely to be afflicted by debilitating diseases. A life-expectancy of 50 or less is common. The chances of acquiring literacy are typically as low as one in 10, or less.

In contrast, there is the modernizing small farmer in East and Southeast Asia, in parts of South Asia and Latin America, and, unfortunately, only in a very few places in Africa. This farmer's yields, production, and income are climbing substantially. Children are healthier and stay in school longer. His house shows improvements and contains more consumer goods.

Small farmers such as these are still a minority in developing countries, but they are a growing minority. Our job is to help the LDCs to help the small farmers become a majority. In so doing, such farmers will be able to make great strides to solve the world food crisis. They have, in fact, been mainly responsible for the achievement of basic food self-reliance or near self-reliance in India, South Korea, the Philippines, Taiwan, and Thailand.

They have played a significant role in agricultural progress achieved in parts of Central America, Brazil, and Colombia, as well as Cameroon, Ivory Coast, Kenya, and Malawi. Increased food production for national consumption has comprised the main element. However, production for export has also been important in such places as Malaysia for rubber and palm oil, Kenya for tea, and a range of crops in Ivory Coast.

The LDC experience over the last three decades tends to confirm Professor Schultz as broadly right. The key to motivating small farmers to increase food production is making changes in critical components of their environment, in particular, changes in incentives, technology, education and infrastructure.

Small farmers everywhere are rational economic decision-makers. This is true even in the most traditional LDC settings where agriculture has

been stagnant for centuries. They use resources efficiently given the technology available to them and the constraints imposed by their economic and ecological environments. They do not lack motivation.

Consider the Punjab region of India and Pakistan, populated mainly by relatively small farmers, that was transformed from traditional to modernizing agriculture in less than two decades. Before the introduction of

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“The more effective way to change attitudes and behavior is to change the environment in which economic decisions are made.”

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new “miracle” or “Green Revolution” wheat seeds in the Punjab, heavy traditional social and ceremonial obligations, such as wedding feasts, were viewed as barriers to agricultural progress. Some outside observers argued: if only the farmers could be persuaded to stop such so-called “irrational” expenditures, the farmers could invest these resources in their farms instead.

Another example of subsistence farmer behavior found in many regions is the practice of growing 15 to 20 different crops on a small plot. Outsiders have argued: if only these farmers could be persuaded to grow one or two crops rather than plant 20 on the same plot, they could increase production.

AID and Peace Corps experience in community development in the 1950s-60s in the Punjab and other areas showed that attempts to directly change social attitudes and behavior are almost always doomed to failure. Social science research has confirmed

the lessons of this experience. There are usually very rational reasons for ceremonial expenditures, such as community insurance; or for planting many crops on a small plot, such as diversification of risk, and so on. In other words, the farmers' behavior is rational in one economic and technical environment, while it might not be in another.

The more effective way to change attitudes and behavior, as the experience in the Punjab shows, is to change the environment in which economic decisions are made. Governments and donors can help make this change. It occurred with the Green Revolution in the Punjab and elsewhere by making available new technology that promised substantial increases in yields, and ensuring that country economic policies did not artificially reduce the incentive to adopt new technology. International donors, including AID, were instrumental in helping to establish the research institutions and to carry out the research that developed this new technology.

The causes of this impressive performance are somewhat more complicated than just technology and incentives. The Green Revolution technology adopted by millions of farmers in the Punjab and elsewhere in Asia and Latin America came in a particular form, namely, that of improved seed varieties and was relatively affordable even for quite small farmers. Many small farmers were able to obtain credit to purchase the needed fertilizer, tubewells, and irrigation pumps. Moreover, heavy investments in rural roads and surface irrigation systems were undertaken by governments, with the assistance of international donors like AID. Substantial investment in basic education helped spread the new technology.

Another factor to be considered is the uncertainty a small farmer faces in his environment. Uncertainty arises not only from potential for natural calamities related to weather or pests, but also from the possible man-made failures in the institutions on which a small farmer depends in order to



*U.S. voluntary agencies supplied the original seed for many self-help community vegetable gardens and fruit orchards.*

successfully adopt a new technology.

The Green Revolution technology was adopted by small farmers in places like Punjab because they had confidence in the ability of irrigation to reduce the risk of drought. They had confidence in the reliability of public and private institutions related to credit, pricing, marketing, supplies, extension, and the security of land tenure. These factors helped ensure that small farmers actually realized the increase in yield and profit promised by new technology.

The Green Revolution has indeed transformed our concept of small farmers in LDCs. It has demonstrated that they are rational economic decision-makers and that when their environment changes in the right direction, they will respond in the right direction. The Green Revolution has also

demonstrated that the "magic of the market place," to use President Reagan's term, is indeed powerful magic, but that it needs to be complemented by some public sector help through basic investments in research, education and infrastructure.

With all that we now know, why has there not been more progress in world food production? In particular, why has food production per capita in sub-Saharan Africa declined? There are answers, but carrying out the implied solutions is not easy—for political, economic and technological reasons.

For example, some countries with declining food production pay their farmers well below world prices so they can give their urban dwellers cheap food. After all, city people can riot and farmers are spread all over

the country. These policies, in effect, tax the poorest people, the farmers, to help another poor group.

Moreover, distribution of fertilizer and seeds, as well as marketing and processing of products often have been hindered by restrictions on private enterprise and by inefficient domination by government enterprises. Also many countries have invested too little in basic infrastructure and education.

Last but by no means least, there has been too little investment in agricultural research by governments and donors. One reason the Green Revolution passed over some areas is that their farming and climatic conditions did not lend themselves to the Green Revolution varieties of wheat and rice. More technology needs to be developed which will give the

small farmer on the arid lands, savannahs and humid coastal areas of Africa sufficient gain from each new technology to make the investment involved truly worthwhile.

The potential gain from new technology must be high enough to at least compensate for the extra risk. Obviously, a small farmer is uneasy about sinking all his resources into new seeds, fertilizer and tools, thereby exposing his entire livelihood to weather or pest-caused failure. So far, not much technology has shown this potential for sub-Saharan Africa.

New approaches to research and diffusion of technology are being developed to provide technologies that small farmers will adopt. One approach is the farming systems research technique which involves multidisciplinary teams of physical and social scientists working in rural areas to discover what small farmers do and why. These teams contribute to developing the agendas for national and international agricultural research centers. Increased attention also is being given to linking international centers to national programs.

Decisions on methods to distribute new technology should be made only after technology is thoroughly tested and proven. A formal extension system, such as those in the United States, may make sense. But formal extension systems can be very expensive in terms of recurrent salary costs and their demand on scarce administrative talent.

Other, non-formal approaches need to be pursued. These can include radio and private enterprise suppliers—approaches that have been effectively employed in some areas of Asia and Latin America. Also, if new technology promises a sufficiently large gain, as the new wheat varieties in the Punjab of India and Pakistan did, it is likely to spread spontaneously with little or no boost from an extension service. Other requisite factors, including adequate incentives, transportation and marketing infrastructure, basic education and needed complementary inputs—such as fertilizer and irrigation

—also must be in place, as they were in Punjab.

AID policies and programs give high priority to agricultural research and other efforts needed to change in the right direction the decision-making environment faced by small farmers. An example is AID's integrated effort supporting the expansion and strengthening of farming systems research in sub-Saharan African countries. The Agency also supports research on crops such as corn, sorghum, millet, beans and cowpeas grown by small farmers in Africa and other parts of the world that have not yet experienced a Green Revolution. Combinations or "cropping systems"

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"The Green  
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of these crops are being developed to both increase yields and reduce risk on the same field.

AID is vigorously pursuing dialogue with host countries and other donors about agricultural policies, including policies dealing with prices and with the reliability of agricultural institutions. Technical assistance is being provided to increase the policy analysis capacity of countries. AID is finding ways to marshal the joint skills and resources of U.S. and LDC private enterprises in order to assist small farmers and stimulate agricultural growth. Technical training and basic education are being emphasized in AID programs.

One mechanism being used to bring these issues to the highest level of attention is U.S. Presidential Agricultural Missions. At Cancun, in Octo-

ber 1981, President Reagan proposed that the United States send high-level teams of experts to requesting countries to discuss impediments to increased agricultural production. So far, Presidential missions have visited and reported on six countries: Peru, Thailand, Venezuela, Honduras, Liberia, and Guinea.

Sustained economic growth and broad-based reduction of poverty involves more than motivating small farmers to increase production. Complementary efforts are needed to increase biomedical research on major human diseases; non-agricultural employment; research of traditional energy supplies such as fuel wood, and research on improved and acceptable methods of family planning. AID is constantly re-examining its programs in order to give adequate priority to these problems.

While the total elimination of hunger and suffering in the world may not be in our lifetime, the United States and other donors, developing countries, and public and private institutions can make significant improvements. A large number of countries may become self-reliant in food in our lifetime. India, for example, recently has become nearly self-sufficient in grain, when just a few years ago the situation was much less hopeful. Small farmers in the developing world are important players in the process of providing an adequate food supply to the peoples of the world.

Booker T. Washington, founder of Tuskegee Institute, observed in his classic, *Up From Slavery*:

*"There is as much dignity in tilling a field as in writing a poem."*

There is no better way of conveying the hope that small farmers hold for helping themselves and others in meeting the world food crisis. They will have the motivation, providing they have the incentives and the tools to work with. This is the challenge shared by concerned peoples everywhere. ■

*This article has been adapted from a February speech at the Tuskegee Institute Conference in Tuskegee, AL.*



and industrial achievements. Future generations, afflicted with shortages of easily obtained mineral and fossil fuels, are more likely to think of us as wastrels who squandered in a few years an inheritance accumulated over a billion years.

The current energy crisis, accentuated by high oil prices, has underlined yet another aspect of our lack of forethought. Coal and oil are not merely fuels, they are also valuable raw materials for producing a number of important chemicals. Future strategies of energy planning must ensure that fossil fuels are put to more legitimate uses, current energy shortages are resolved through more efficient utilization of existing

resources rather than by further depleting our reserves, and any unavoidable expansion in energy requirements is provided for out of nuclear, solar and other unconventional sources.

The highly industrialized countries use a disproportionate amount of existing fossil resources. Twenty-five percent of the world's population, living in the United States and Europe, uses up 84% of the total supply. Another 15% is used up by 50% of the world's population living in China, India, Pakistan, Brazil and some other countries. A meager 1% is available to the remaining one billion people inhabiting vast tracts of Africa, Asia and Latin America.

The disproportionate availability and use of energy have been, respectively, the cause and the effect of large differences in economic development. Though the annual growth rates in some developing countries are more than those in some developed countries, the quantum of increase in absolute terms is much less.

The problem of efficient energy management in less developed countries is complicated in yet another sense. In India and other similarly placed countries, the pattern of consumption indicates that, although the annual growth rate of consumption based on non-commercial energy sources (wood and cow dung, for example) is less in comparison to that based on commercial sources (oil and coal, for example), the share of the former is still inordinately large—as much as 44% in India as against a mere 5% or so in highly developed countries. Since urbanization is a necessary concomitant of industrialization, demand rates for commercial fuels are likely to go up at an accelerated pace.

A feasible solution is the development of different types of technology that bring the non-commercial fuels, after suitable processing, into the orbit of commercially acceptable products. An additional reason, which should impel more effort in this direction, is that the efficient use of non-commercial fuels is at the moment woefully low. Any technology that brings about even a modest increase in the fuel efficiency will contribute to a solution of our energy problems.

#### India's Commercial Energy Resources

Estimates of the extent of coal reserves in India vary, the most optimistic figure being around 100 billion tons. At an estimated yearly growth of 7%, these deposits are likely to be exhausted by the end of the next century. This period is likely to be further reduced if India's increased oil requirements are to be met by using coal as a substitute, or if coal is

purposes. First, it is aimed at government officials, executives and others able to attend only the first two weeks, by providing at a suitable level of detail, a summary treatment of the alternative sources of energy, associated technologies and their applications. Second, it serves as a thorough introduction to the main course.

Approximately 40 participants from developing countries attend each 15-week training session. To date, five training sessions, attended by 169 people representing 42 different countries, have been held. A sixth session will begin August 23.

Two other training programs in energy have been put into operation since AID's Office of Energy was established in 1978. The Energy Management Training Program, started in 1977, has trained about 130 people from 30 countries, all mid- to senior-level officials from developing countries in and outside government. The program is run by the University of New York at Stony Brook under a Participating Agency Service Agreement (PASA) with AID and the Department of Energy.

The newest program, Conventional Energy Training Program, began in August 1981 with the Institute for International Education to help developing country officials build up their capacity to produce and use fuel from conventional indigenous energy sources. The program plans to offer about 100 fellowships a year to train participants in U.S. academic institutions, industries, and research laboratories. The program will emphasize science and engineering, but related disciplines—law, economics, business management and the environment—will be covered. Tailored to the individual's needs, the training can last from a few months to two years. Participants are studying petroleum engineering at the University of Southern California, energy resource management at the University of Pennsylvania, mining engineering at West Virginia University, civil engineering at Washington State University and energy resources at the University of Pittsburgh.

exported to pay for higher oil imports. (In the present international price structure, export of coal can help in procuring about half its weight in oil.)

The consumption growth rate can be lessened if the now-immense waste in mining, washing and transportation is reduced. The present rate of recovery during mining is about 40% and nearly half of the mined coal

billions (approximately \$5.5 billion) shortly. It will then consume nearly three-fourths of India's total export earnings. There appears to be no escape from this situation except by tapping alternative energy sources, whether alcohol, coal, nuclear or solar.

Although recent power cuts in many Indian states have tended to highlight shortfalls in production of electricity, one of the major reasons



*Professor and author S.K. Sharma participated in the University of Florida's energy training program which included hands-on experience.*

becomes available as the washed product. Long distance hauling of coal in coal-fired locomotives may consume as much as a third to a half of the coal finally delivered. Better technologies in mining and washing and in locating major coal-using industries nearer the mining areas appear to be necessary to conserve coal.

Oil production as well as consumption in India have increased and will increase faster than coal. Proportionately, the consumption growth rate is well above the present international levels. A brake on this rate will have to be applied sooner rather than later: the import bill of Rs 30 billion (approximately \$3.3 billion) for about 15 million tons of oil is likely to increase to Rs 50

for power shortage in India is the huge loss in transmission and distribution. Seldom is less than 20% of the electricity lost on its way to the consumer; in some instances, it is twice this figure. While bad management is partly to blame, further improvements in transmission and distribution technology also are warranted. The situation also calls for better maintenance of power plants, most of which operate at abysmally low efficiency levels.

#### Non-commercial Sources

Forests covering 202.5 million acres constitute 23% of India's total land mass, as against a world average of 33%. It is unlikely that this percentage will increase significantly in the future: land required for crops and non-



agricultural use is bound to be in greater demand because of population increases. However, there appears to be considerable room for reforestation, given a more scientific management, and for schemes designed to prevent the spread of deserts. Past policies have led to denudation in many hilly regions, altered the ecological balance and caused floods.

While India spends nearly Rs 3 billion (\$33 million) every year on short-term measures for flood control, its total expenditure on forests was less than this amount in 24 years from 1951 to 1974. A greater emphasis on preservation, if not expansion, of existing forest area is needed to conserve the most important non-commercial energy resource. India now consumes nearly 142 million



*Fifty million tons of dry cow dung are burnt in rural domestic hearths.*

tons of wood each year. It has been estimated that there would be a shortage of 100 million cubic meters of firewood by 1990, when the rural demand will be 300 million cubic meters. Since this demand is not likely to be satisfied by the forest resources that will exist then even if the task of planting quick-growing trees is undertaken now, there will be a correspondingly higher pressure on commercial energy resources.

Fifty million tons of dry cow dung and other animal refuse are burnt in rural domestic hearths at an efficiency of as little as 5% and at the most 11%. A more economic use for animal and human excreta is obviously as a manure, preferably after production of bio-gas, but problems of fuel substitution are stupendous in view

of vast poverty in the countryside.

Because of many technical snags, the progress in installation of bio-gas plants has been somewhat tardy, and many such plants commissioned in the past are no longer in operation. Extensive research appears to be needed in order to eliminate the technical drawbacks, particularly with respect to the low calorific value of the gas obtained (650 Btu/cu.ft. compared to 1,030 for methane), corrosion problems, low conversion efficiency in winter, undue dilution of slurry at the outlet point, scum formation and sand deposits.

The total farm waste used as fuel during 1974-75 was estimated at 37 million tons, including 20 million tons of bagasse. The thermal efficiency obtained was quite low. More-

over, much of this farm waste can find better uses than as mere fuel, provided fuel substitutes are available. There is a possibility of using urban garbage, the volume of which is increasing fast, as fuel and in many other different ways.

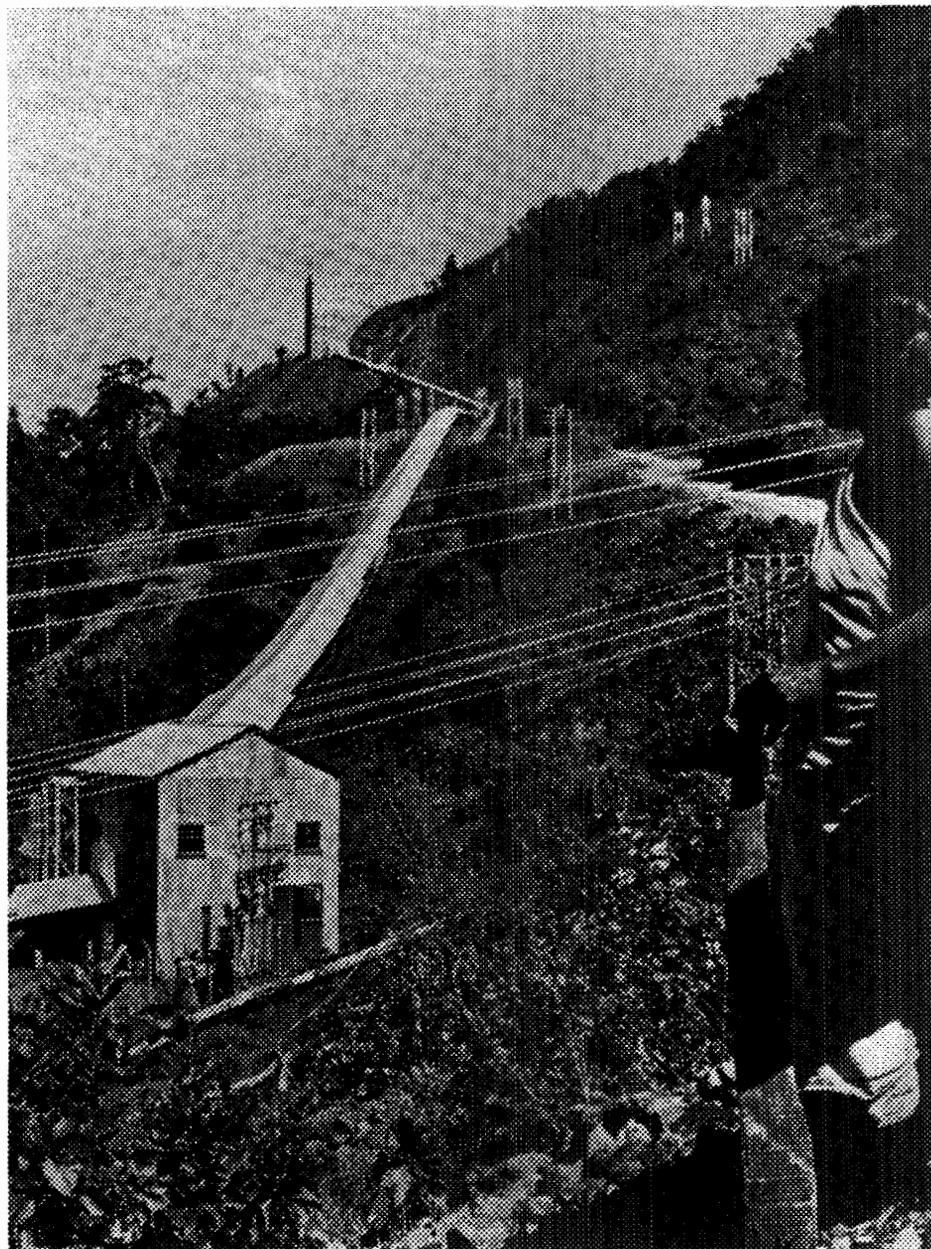
#### Other Strategies for Energy Production and Conservation

In addition to the areas of research in techniques and management indicated above, a number of other immediate, medium-range and long-range measures are feasible.

Industry in India consumes about 45% of available commercial energy, a little more than half by the metallurgical industries alone. The pattern of energy consumption is 40% coal, 15% oil and 45% electricity. Large savings may be effected by conservation measures. For instance, up to 15% of the energy can be saved even in the present stage of technology by properly redesigning reheating furnaces. Heat recovery is possible from hot rolled finished products. Waste heat recovery from flue gases can be made more efficient.

On the household front, there is an urgent need for modifications in oil stoves, traditional hearths and other fuel-burning devices. More than 90% of heat obtained in our kitchen fires is wasted.

Huge energy savings are possible in transportation. Many coal-fired locomotives have efficiency levels as low as 7%. Badly designed and ill-maintained internal combustion engines waste a lot of energy. Vehicles meant for personal transportation are unnecessarily heavy. Our automotive petrol consumption of 2.5 billion liters can at least be partly substituted by 440 million liters of alcohol, now produced from molasses. The technical solution required in this case is that of finding economical methods of increasing alcohol content from 42% to 100%. It also has been suggested that it may be cheaper, from the foreign exchange point of view, to stop sugar exports and divert sugar to make power alcohol.



*Better technologies can reduce India's immense waste of coal in mining, washing and transportation.*

Two unconventional sources of energy—geothermal and wind power—have received relatively little attention from energy planners, though their potential in meeting local energy needs is quite high in Himachal Pradesh, Jammu and Kashmir and other similar areas.

#### Solar Energy: Immediate Prospects

In India, on an average, there are 300 days of sunshine because of its location between 7° to 37° N latitude.

The total daily solar radiation levels range from 350 calories/sq. cm. in winter to 550 in summer. Within the bounds of the presently available technology, solar energy can replace conventional energy sources in numerous applications. This is all the more important in respect to the rising living standards in villages, since transmission and distribution of electricity are the main bottlenecks in rural electrification. (At the current level of progress, there is no possi-

bility of complete rural electrification even by the end of this century.)

The areas of agricultural operations for which solar energy expertise is already available include water pumping, drying of agricultural products (in which case, quick drying has many additional advantages also), parboiling of rice, and the like. Solar ponds offer an exciting possibility of using solar energy to supply heat for farming as well as for industries. They do not involve highly sophisticated technology and are cheaper than collectors of the traditional types.

#### Medium- and Long-Range Strategies

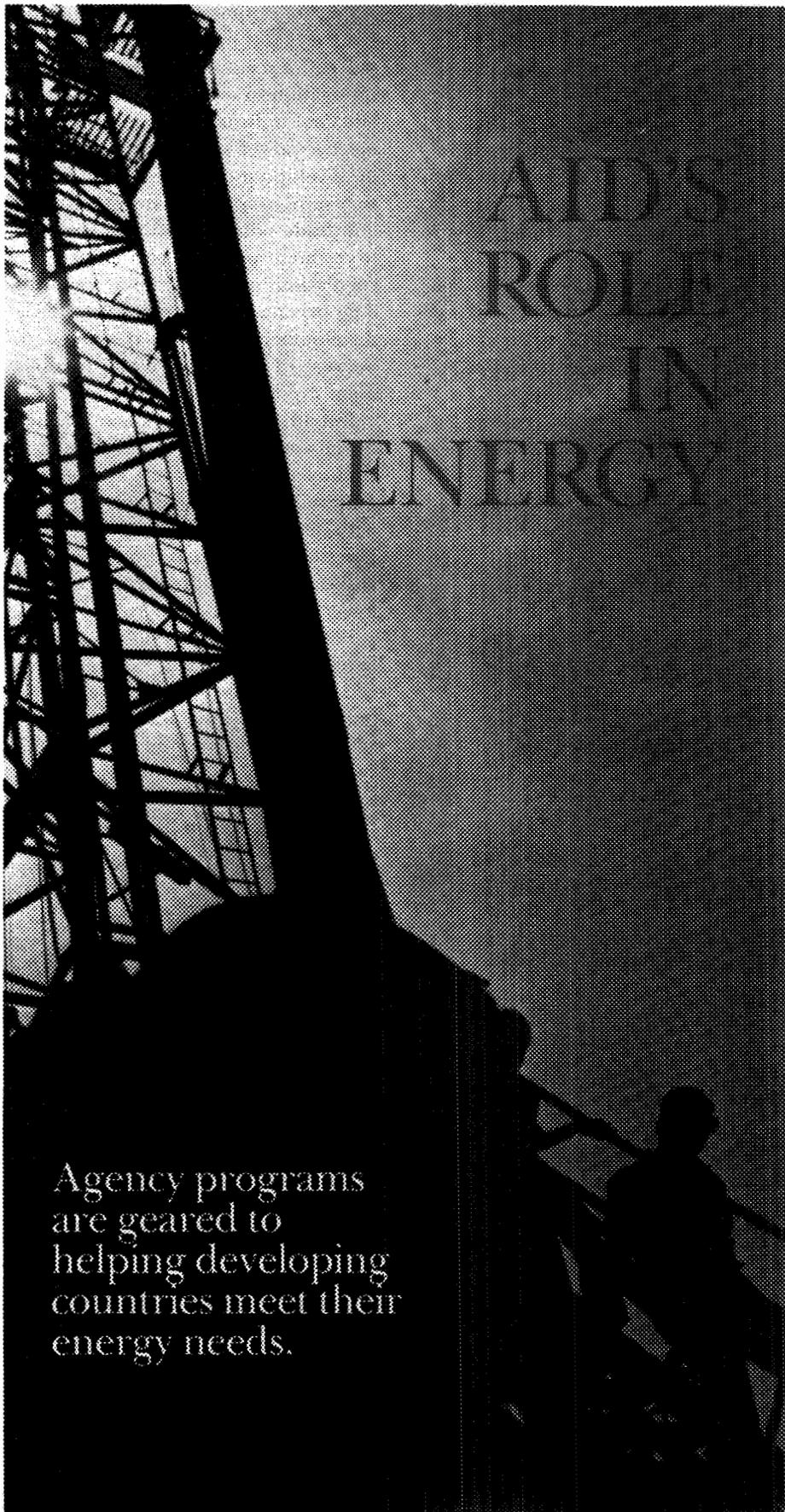
It is inevitable that power generation priorities will shift in the future toward unconventional sources such as nuclear, solar, geothermal, tidal and wind energy. Yet there are conventional sources that require more attention. One is coal. High pressure coal gasification plants set up near pit-heads offer attractive investment opportunities. The cost of generating gas may be 20% to 25% cheaper than that of importing and refining corresponding equivalents of oil, and the pay-back period is likely to be less than 10 years.

As part of the medium-range strategies, much of the antiquated and obsolete equipment in industry, particularly in mining, needs to be modernized.

Long-range measures include a much greater investment in research and development in non-conventional areas (e.g., capturing solar power through photovoltaic and solar thermal routes, fast breeder technology utilizing our indigenous thorium deposits.)

These are exciting possibilities warranting attention. ■

*S. K. Sharma, a professor in Punjab University's Department of Chemistry in India, was one of several energy experts from developing countries to take part in AID's Alternative Technologies Training Program at the University of Florida. He made the assessment of India's energy needs after the training in 1980.*



## AID'S ROLE IN ENERGY

Agency programs are geared to helping developing countries meet their energy needs.

Energy is an important component of AID programs. AID's energy programs are tied to general development goals to help poor people. In achieving that end, the energy program is sensitive to the interdependence of rural and urban energy needs, as well as the traditional and modern sectors of developing economies. Programs encourage and support the development priorities of poor countries. Priorities of countries reflect natural resources, development of human and physical resources, and financial capability. AID's energy programs emphasize technical assistance in several areas, as part of the Reagan Administration's commitment to help people help themselves.

First, in *energy analysis, planning and policy development*, poor countries need better understanding of their energy resources, their uses, as well as technologies and their characteristics. In response, AID will help developing countries to collect, organize, and analyze information useful to decision-makers and investors. Significant data gaps, on rural and traditional energy demands, require field surveys to collect primary data.

Commercial energy has been the principal focus of most developing countries' national energy planning efforts, by the multilateral and bilateral institutions, and the private sector. While continuing to do some work in commercial energy, AID will undertake energy planning in the often ignored rural sector. Understanding of rural energy needs lags behind the data available on the modern sector. AID's attention to the rural sector—in both traditional and commercial energy development—complements the work of other donors and investors, and other AID efforts. It should lead to a better understanding of the interrelationships between rural and increasing urban energy needs, and indicate the energy technologies suitable for meeting those needs.

It is the Agency's view that a successful energy policy includes:

1. an energy pricing structure that reflects the real costs and risks involved in today's world energy markets;

2. an investment climate which encourages both private and public investment to meet energy needs;

3. a program to promote development of a diversified supply base, emphasizing a country's own resources to the maximum extent possible;

4. a careful evaluation of the energy needs that emerge from overall development strategies; and

5. a special commitment to meeting the small but truly critical needs of poorest citizens, those living at or near the subsistence level and depending entirely on their own agricultural production to feed themselves and earn a basic income.

Pricing policies present a special challenge. In general, it is the Agency's position that free-market pricing produces an efficient allocation of resources and encourages investments in economically sound development.

A second area of focus is *training and institutional development*.

Creating and strengthening developing country human resources and institutions remains a fundamental element of all AID programs. As part of the Administration's self-help emphasis, the best talent in the United States is made available to help countries do things better themselves.

AID has trained many host country nationals in programs here in the United States such as the Energy Management Training Program at Stony Brook, NY, the Alternative Energy Technology Training Program at the University of Florida, or the Conventional Energy Training Program. Other programs operate at the regional or national level, such as the ASEAN and the Indonesian energy manpower training programs. Training is a part of most of AID's programs.

A third area of focus is in *energy technology systems, field testing and*

*research*, especially those using renewable resources. AID has financed projects introducing and testing innovative energy technologies. The purpose of these activities is to provide information necessary for potential investors—both public and private—to make informed decisions on the potential of different technologies. The feasibility of a proposed technology in a developing country requires hard economic, social, institutional and environmental analyses as well as technical analysis.

AID's approach to field testing will: (1) identify significant end-use

“The private sector  
is critical to  
the development  
of energy  
resources. . . .”

requirements; (2) research new technologies that could satisfy them; (3) and disseminate the results of field tests using them.

In research, fuel wood is one of the Agency's priorities. AID is drawing up plans for programs in this area. It includes, for example, work on improved species of trees, more efficient wood stoves and gasification processes.

A fourth area of focus is to *increase energy supplies*. Developing countries must exploit their own energy supplies to minimize the foreign exchange drain. For most countries, fuels and energy forms already in use will continue to supply the major share of energy needs for the foreseeable future.

In energy production, it is the Agency's view that the private sector should have the major role. The public sector may be needed for infrastructure, training, research and to set the critical policy framework. But the private sector remains the major source of investment for the development and utilization of resources.

Private capital and expertise in the United States have been the major sources of scientific and technological innovation to develop U.S. oil, gas, and coal industries, and much of our electric power sector. Governments of developing countries might look to a similar approach through tax and trade policies, and positive investment policies, particularly regulations governing joint ventures. The private sector is critical to the development of energy resources because of its expertise and investment capital.

But attracting private investment in the energy sector of developing countries is an especially challenging undertaking. The risks associated with new technologies and large-scale investments in remote areas often appear great and the profits seem uncertain.

Better ways must be found to ease investor concerns with expropriation, *ex post facto* contractual changes, political instability, and developing country concerns for an equitable share in the exploitation of their own resources.

Governments can be helpful in providing research data for initial exploration that can be used by the private sector. Currently, for example, AID is providing technical and financial assistance to Morocco to mobilize private enterprise for the exploration and use of the indigenous oil and gas resources.

The multilateral development banks and the bilateral assistance agencies like AID can play a limited but sometimes critical role to encourage private energy investment. This is especially true in cases where indigenous oil and gas resources may only be sufficient to meet domestic needs. ■

*This article is adapted from AID Administrator M. Peter McPherson's speech to the AID Conference on Energy Analysis, Planning and Policy Development in Developing Countries, held in Reston, VA.*

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# INTEGRATING RURAL DEVELOPMENT IN NIGER

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Isolated in a quiet valley 25 kilometers from the highway, the Boula farmer couple training center matches its rural setting. The chicken coop has mud walls; the corral is made of branches stuck in the ground; the supply shed is a wooden frame covered with canvas; farmers' houses are thatched huts, and, except for the cement reinforced walls, are just like huts in a village. Meals are prepared and eaten communally to save time and energy.

Boula was designed simply, after a village, so farmers could live much as they do at home. The farmers come to Boula, with women and children, for nine months. During this time they learn how to use fertilizers, insecticides, planting techniques, seed varieties, and oxen and plows—skills and tools that will increase the yields of their fields back home. In addition, women learn about health and nutrition, and both

A "Home Away from Home" brings new farming technology to Niamey

*by Roger Wall*

LAST OF A SERIES

men and women take literacy classes in national languages.

The Boula center, along with two others, forms the heart of the Niamey Department Development Project, a \$21.3 million joint project between AID and the Nigerien government. The project serves people living in most remote parts of the Niamey department, a 90,000 square kilometer area which includes Niger's capital, Niamey.

"The real meat of the project," according to John Mullenax, the project adviser during the first phase, "is to increase productivity." That also happens to be the key to the Nigerien government's goal of food self-sufficiency, which it met for the first time in the 1980-81 growing season.

Increased cereal yields is a critical element of overall agricultural development in Niger. According to AID officials, years of poor land manage-

ment have reduced soil productivity. That's why there are similar projects in five of Niger's six other departments, helping support the government's goal of increased food productivity.

During phase one, project workers saw that training at the centers gave farmers a solid foundation in productive farming techniques. But that foundation was of little use if farm equipment wasn't ready for them when they left the centers, or if technical service personnel were not in place to reinforce what farmers learned. Therefore, efforts focused on developing what Mullenax calls the institutional management structure: finding competent managers to coordinate the project, developing effective administrative procedures, and building offices and cooperative warehouses for technical service personnel and delegates of the national cooperative movement organization, UNCC.

In phase two, the appointment of four county level project coordinators is strengthening the management structure. Working with technical service personnel and cooperative delegates, they follow the project's annual calendar of goals and deadlines and check trained farmers, making sure they properly use their new equipment.

Saley Moussa, project director, believes that the coordinators' main responsibility is to encourage technical service personnel to integrate their field work. He believes the problems which the service personnel encounter in the field are so inter-related that they can no longer be given purely individual solutions. To assure an integrated response, Moussa requires service representatives to submit a detailed plan of how their field work will touch several agricultural sectors before he approves project resources such as vehicles and gas.

Part of creating the grassroots structure for the project involved forming 41 cooperatives to distribute farm materials to farmers through

loans, and to market crops. Farmers belong to cooperatives through a village level organization called a mutual group. Five or more mutual groups make up one cooperative. After a year's grace period, farmers start paying back the loans on equipment they brought home from the training center. Loans for materials are payable over four years with a 10.5% yearly compound interest rate.

Though cooperatives make loans to farmers at the training centers, their main function is to serve farmers who do not attend a center. To qualify for a loan, a farmer must be a cooperative member, and the cooperative must be willing to guarantee repayment of the farmer's loan. If the farmer wants to buy an animal, he must also have enough forage to feed it.

Making sure farmers pay back their loans is one of Tom Shaw's main concerns. As the project's credit and commodity specialist, he monitors the credit operation and its effect on cooperatives. If farmers don't repay their loans, then the credit fund of their cooperative will shrink. If the cooperative overextends itself, the national cooperative bank will cut off its credit fund until the appropriate percentage of loans is paid back.

Shaw is concerned about how much money a cooperative spends through farm supply loans, and how much money is paid back. If there is no money, then there are no loans, no farm supplies, and in the end, no spread of new farm technologies.

Shaw also is concerned that all farmers, both in small hamlets as well as in large villages, have equal access to loans for animals. As more farmers participate in the project, and in cooperatives, he makes sure enough agricultural materials from the project are ordered in time to be distributed through cooperative warehouses. That way, farmers have the right materials at the right time of the agricultural season.

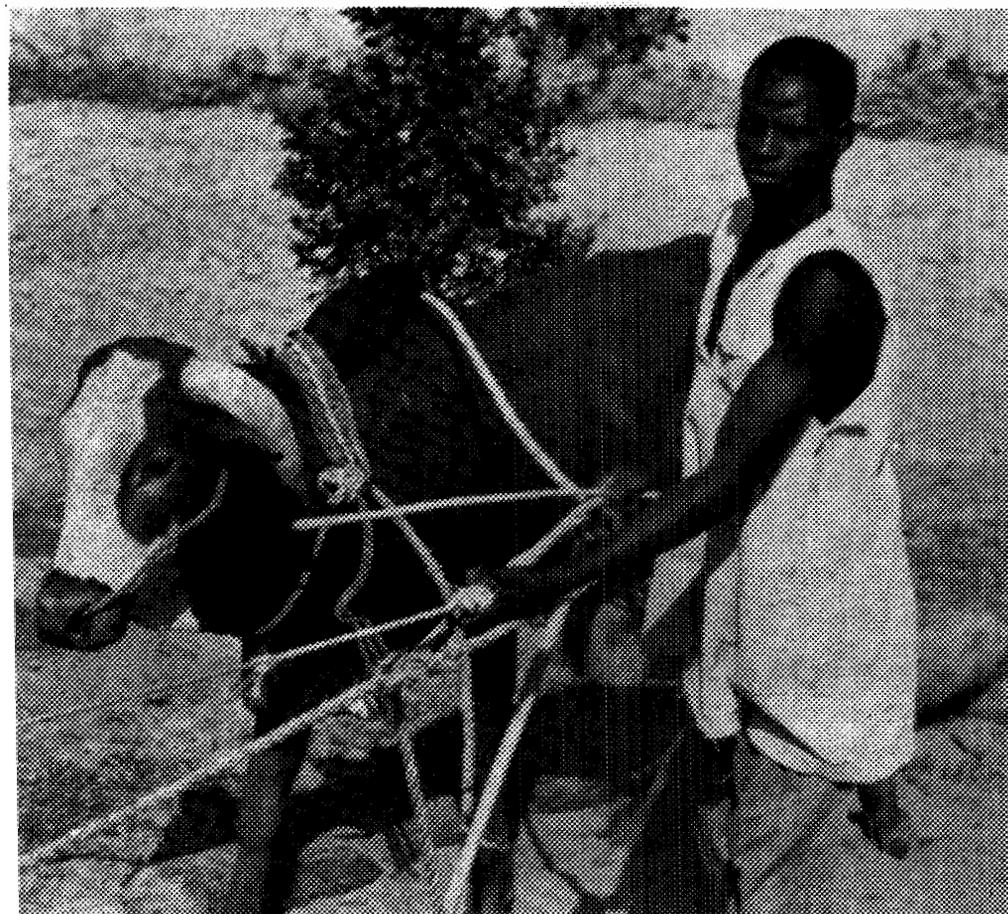
What farmers do with those materials after they receive them has always concerned project workers. During



the project's first phase, they found that the traditional extension approach, where an agent goes to a village and demonstrates farming methods, was ineffective. A better way was to bring farmers to the training centers where in an isolated environment they could concentrate on learning.

During phase two, the project is expanding this approach by building seven more centers. That will bring the total number to 10 with the capacity of training 200 farmer couples a year.

But like anything new, the centers weren't accepted from the start. Because farmers were skeptical of the centers, villages sent some people who weren't really farmers, others who didn't have enough land to effectively use oxen and plows for cultivation, and still others who didn't have control over their fields. When they returned, it was not uncommon for an older relative to refuse to



*At the farming centers, Nigerian farmers learn how to use oxen to plow their fields.*

allow them to practice the new techniques.

When project workers visited the farmers, they found them using only some of the techniques, or only cultivating a portion of their field using new techniques. Other farmers were using their animals and carts to haul goods for commercial profit instead of hauling fertilizer to their fields. In a few cases, farmers left their equipment with relatives and migrated to the coast for seasonal work.

Other reasons why farmers didn't use their new equipment and farming methods were technical. One couldn't use his plow because it was missing a \$1.50 part. Because there are few blacksmiths to fix broken plows, mechanical problems sometimes stymie farmers. But by training blacksmiths and stocking a blacksmith shop at each cooperative, the project has started to solve the problem.

These technical and personnel problems have shown that the key to successful farmer training is selecting good candidates and standing by them once they return home. Candidates for the nine-month training now must meet criteria: they must have control over their fields, be at least 25 years old, but no more than 45, be married, and be motivated to work at the centers. Farmers who qualify are selected by their village mutual group to go for the training.

Once candidates are selected, people like Dale Downes, a Peace Corps volunteer who works at the Simiri center, encourage them to put their newly learned skills to work. His first year is spent building his credibility with the farmers. "Next year," he says, when he goes into their fields to check their progress, "I'll know 20 farmers personally. And that will make a big difference."

Although Project Director Moussa

modestly assesses the accomplishments of phase one, the preliminary results from this year's harvest indicate the project is having a significant impact among farmers who adopt the new practices.

One question that has been debated, both in the Niamey project and in many other development projects, is the role of women. Because women do all the domestic work and meal preparation, their role is critical to family food production, even if they aren't formally considered in a development project. And traditionally, that has often been the case.

Wendy Wilson, coordinator for women's activities in the project, says that during phase one, "the biggest event was that women were invited. For people in rural areas, that in itself was revolutionary."

While their husbands are training at the center, the women work in the 40 hectare communal field. At the Fandou and Simiri centers, Peace Corps volunteers work with the women.

Kathy Sylvester, a volunteer at Fandou, uses the water faucet to wash children, cuts their toenails, and teaches women how to make bouillie, a nutritional porridge of millet, milk, and sugar. At the Simiri center, volunteer Ann McPhail teaches nutrition and health care. Most of her time, though, is spent working with women in using agricultural techniques.

Much of the women's experience at the training centers is spent in what Wilson calls learning a process that they can take home. For example, when women raise chickens, they're learning a management skill. "When a woman decides whether to use an egg to supplement her family's diet or to increase the size of the flock, she's making a management decision," says Wilson. Learning to make that decision is a fundamental skill that affects her role in the household production unit.

Sylvester would like the women to take home material results from the centers, not just new learning processes. "Women don't take back much

because they aren't given anything," she says. Unlike the men, they don't bring home oxen, carts, and plows. Technically, women are members of cooperatives and can take out loans. But in the past, they have had difficulty in getting credit.

That situation may change under the second phase of the project, when women receive approximately 40% of the monthly salary that is normally paid totally to their husbands. Plus, \$50,000 of the credit fund established through the national cooperative organization is being set aside for women to buy farm supplies.

In phase two, project workers are to explain more than how to use basic technical aids like adaptive seed varieties, fertilizer dosages, and weeding techniques. Increasingly, they are stressing the social impact of integrated agricultural development, especially the important role of farmers' wives.

Another part of the project that benefits women is the installation of diesel fuel powered millet mills. Located in villages, the mills' operations are managed by village committees made up of one woman and two men. The committees record the mill's daily earnings, pay a trained miller to operate and maintain the operation, and sell 10-cent tickets to village women. The tickets go to the miller to grind their millet into flour. Except for 5% to 10% of the women, finding money to have millet ground is not a problem. And grinding millet by machine, instead of pounding it by hand, saves time and energy.

But in the larger strategies of the project, if farmers adopt the techniques they learn at the centers, they can double their crop production. New farming techniques are having an effect. In Kolo, 30 kilometers south of Niamey, the average millet yield in 1981 was 650 kilograms per hectare. But six farmers using improved farming techniques harvested an average of 1,383 kilograms per hectare, a yield of over a metric ton.

Ninety kilometers north of Niamey,



*Farmers can double their production by adopting new techniques.*

near Ouallam, where the rainfall is less and the soils are poorer, the same pattern exists. Though the 1981 average millet yield was 340 kilograms a hectare, Yacouba Morou, a farmer in Sadeize Koira, was able to harvest nearly three times that much, using techniques he had learned at a training center.

In another case, a highly motivated farmer showed his oxen and plow to a friend, who was so impressed that he bought oxen and a plow and learned how to use them. This is the type of demonstration effect that project workers hope will encourage other farmers to adopt the new techniques more often.

Since farmer couple training centers have existed for three years, more farmers have had a chance to see how the new farming techniques can make a difference in crop production. As the project has progressed, John Mullenax noticed that farmers' interest in the technical package changed. At first, they mainly were interested in animals and carts because they could use them to make extra money doing off-season hauling.

Carts have been so popular that the Nigerien government no longer subsidizes their purchase. Toward the end of phase one, though, Mullenax heard farmers asking about seed varieties instead of carts. And Tom Shaw has encountered farmers who are more interested in plows than carts.

In a large development project like the Niamey project, there are many variables to coordinate—people, seasons, materials, finances, deadlines. Succeeding in one aspect doesn't guarantee the success of the whole project. Rather, it's the cumulative effect of making everything work together.

Providing a coherent organization to the project's many activities is what Jim Lowenthal sees as the basic challenge of the project. This is a difficult task, as project workers have found. Technical, managerial, and social issues must be balanced effectively for the project to succeed. The process requires a lot of talking with farmers and Nigerien officials to see what they need, and a lot of trial and error to see what will work.

While there is some question in the donor community about the manageability of large, complex rural development projects, the Niamey Department Productivity Project has established systems and structures that let it have a significant impact on food self-sufficiency. Part of this success is Director Moussa's commitment to accountability and management control. That reinforces the project's effort to show farmers how they can guarantee themselves food security, despite a harsh environment. For a farmer, it is not difficult to see the difference in yields between fields where new techniques were used and those where they were not used. Increasingly, in the Niamey department, farmers are choosing improved farming techniques that will reduce their dependence on external assistance. ■

*Roger Wall is a freelance writer living in Ipswich, MA.*

# PVO ADVISORY COMMITTEE TAKES A FIRSTHAND LOOK

by Angela Wright

Voluntary agencies, business and governments gather to improve coordination.

In Haiti, three private voluntary organizations (PVOs)—CARE, Pan American Development Foundation, and Operation Double Harvest—are working together to plant some four million trees by the end of the year. The trees will help retain the soil, increase energy supplies, and provide fuel wood, as well as generate income for small farmers.

In Dominica, the local PVO Dominica National Development Foundation is assisting small-scale entrepreneurs in all aspects of commercial management.

In Jamaica, public health nurses are being trained and the tourist industry is receiving management assistance to improve productivity with the help of Sister Cities International.

These are a few of the hundreds of PVOs working in the Caribbean region. But, the growing number of PVOs operating in the region has strained available funds and skilled manpower. Some observers say the proliferation of PVOs has caused an overlapping of activity. Others view the number of PVOs as beneficial if efforts are better coordinated among PVOs, government agencies and interested entrepreneurs.

To meet this end, the Advisory Committee on Voluntary Foreign Assistance (ACVFA) was set up by AID in 1946 to help coordinate U.S. government and PVO activities. It has 28 members, chosen from the U.S. private sector and appointed by the AID Administrator.

ACVFA acts as a bridge between AID and U.S. and indigenous PVOs. The committee's quarterly meeting in March was held in Kingston, Jamaica—the first meeting in ACVFA's 37-year history to be held outside the United States.

The meeting gave Caribbean-based PVOs an opportunity to voice their views and participate in a meeting that, if it had been held in the United States, would have been too costly to attend.

In a message presented by Julia Chang Bloch, AID's assistant administrator for Food for Peace and Voluntary Assistance to those attending, AID Deputy Administrator Jay Morris noted the importance of

the Caribbean meeting: "It is an affirmation of the priority which the Reagan Administration places on the region. We want to showcase Jamaica, focusing worldwide attention on the progress by the Seaga government in furthering economic progress through private enterprise and stability through democratic institutions."

Morris also described the meeting's importance over the longer term:

"Bringing American citizens and the citizens from Caribbean nations together to discuss common interests . . . will further friendship and good relations between the United States and the Caribbean.

"Bringing the leadership of American PVOs together with the leadership of Caribbean PVOs will result in innovative suggestions on specific mechanisms for collaboration between these two groups.

" . . . AID will return to Washington with a better understanding of how best to work not only with local PVOs here in the Caribbean but also with local PVOs throughout the world."

Committee members and conference participants were able to take a first-hand look at the projects and people touched by the work of PVOs in the Caribbean.

"The opportunity to meet at length with PVO personnel and government officials from throughout the Caribbean and to tour local development projects was extraordinarily valuable to the committee," said ACVFA committee member John Clark. "It was also clear," he continued, "that our on-site inspection of projects impressed both PVO representatives and the numerous Caribbean officials in attendance with the depth and sincerity of our interest in their development need."

The Jamaican newspaper, *Daily Gleaner*, complimented the committee members saying that "representatives read like a Who's Who in business, and in intellectual, academic and social development circles in the United States. . . ."

In addition to taking the forum out into the field, the meeting brought together 200 representatives of

Caribbean and U.S. government agencies, private voluntary organizations and private businesses who looked closely at problems and progress of development efforts in the region; President Reagan's Caribbean Basin Initiative (CBI) and the private sector's role in the CBI; and the key role women play in development.

Top government officials from the United States, Jamaica, Dominican Republic, Haiti and Barbados attending the meeting discussed the best public policy for the Caribbean's economic development. Five Jamaican Cabinet ministers attended the meeting.

#### Focus on Jamaica

Jamaica's Prime Minister Edward Seaga wrote President Reagan prior to the ACVFA meeting, expressing his pleasure that the meeting was being held in Jamaica giving the opportunity to show "the progress we have achieved in furthering economic progress and democratic processes in Jamaica. This meeting will stimulate private non-profit, as well as corporate interest in Jamaica's new-found well-being. . . ."

Seaga, in New Delhi at the meeting of the non-aligned countries, was represented at the meeting by his personal friend Ronald Irvine, head of the Jamaica's Labor Party and minister without portfolio in the prime minister's office.

Irvine's keynote address focused on the troubled economies of the Caribbean. He said those problems are reflected in large balance of payments deficits, high rates of unemployment, and "rates of growth of production that are inadequate to both sustain the economies and grapple with the problems of low standards of living."

Most of the Caribbean countries, he said, are small island states with populations and internal markets too small to allow for any meaningful expansion of the gross domestic product. They must, therefore, look to external trade for any significant contribution in expanding their economies.

As for Jamaica, Irvine noted the significant expansion of its tourism industry. But he also acknowledged the need to train youth of Jamaica in skills and crafts to interest tourists.

Irvine asserted that the main thrust of any development strategy must come from the agriculture and agro-industry sector—one most of Jamaica's population depends on for a living. For example, he said Jamaica's government is experimenting in growing winter vegetables and other products which could attract the U.S. market.

He pinpointed Jamaica's biggest need as the need for high levels of foreign capital to finance material and machinery imports. This is one reason why the Jamaican government places such importance on the

CBI's one-way trade proposal, he said.

Irvine said PVOs could play an equally important role in the development of Jamaica's economy by helping with the development of human resources and of a proper scientific and technological base, expressing concern about the exodus of skilled manpower to Canada and the United States.

Irvine closed with the assurance that the Seaga government was committed to developing the private sector and to a stable two-party democracy. "Both parties have one end," he said, "the betterment of life for people in Jamaica."

Jamaica's Minister of Social Security Neville Lewis, the head of the agency that oversees PVOs in Jamaica, shared his hope that the meeting would "generate meaningful discussion so that the decisions and actions to be taken will challenge others to become involved."

Errol Anderson, minister of youth and community development, cited an urgent need for training people involved in voluntary service in order to strengthen the managerial and administrative capacity of Jamaican voluntary organizations. Training local volunteers in such areas as child care and modern scientific methods should be a priority concern, Anderson said.

#### AID's Position

Representing the United States were Julia Chang Bloch, AID's assistant administrator for Food for Peace and Voluntary Assistance; and Otto Reich, AID's assistant administrator for Latin America and the Caribbean.

Bloch reaffirmed the U.S. commitment to a further involvement of the private sector in foreign assistance programs, particularly with PVOs. In the last decade, Bloch said, AID support for PVO-administered development programs has increased fourfold—from less than \$50 million in fiscal 1973 to more than \$190 million in fiscal 1983. In each of the past three fiscal years, over 13% of AID's development assistance program was channeled through programs administered by PVOs.

Reich said development agencies too often become overconcerned with the delivery of social welfare programs. He said that such attitudes make the definition of the task too narrow. "The only sure way to increased social welfare is to make people more productive." Two elements are essential in that process, he added. "A country must provide incentives for people to become more productive. And it must provide opportunity for greater productivity."

Reich said incentives mainly need to involve rewarding people for productive investment, risk-taking, and increased efficiency. He said opportunity should involve making mass education available, limiting the government's role, and using the free market for productive resources.

## A Push For CBI

Questions and concerns about the future of President Reagan's Caribbean Basin Initiative were raised. All three aspects of the CBI—the trade incentives, one-way trade proposal and the emergency funding—have different, but equal, appeal to various segments of the Caribbean economy.

PVOs have a vested interest in all three aspects of the CBI. In March 1982, they formed a coalition which proposed a people-to-people amendment to the CBI legislation, which requires a portion of CBI funds be channeled directly through PVOs. Consequently, \$32 million of the \$350 million supplemental appropriations for the CBI is being disbursed through PVOs in 1983.

The Jamaican investment community's interest in the CBI also was evident at the conference. The Jamaica National Investment Promotion (JNIP), a public sector organization established two years ago to promote and facilitate private sector investments in Jamaica, is strongly in favor of the trade portion of the CBI, according to JNIP Managing Director Corrine McLarty. But McLarty pointed out the need to tackle areas which fall outside the normal purview of private sector interest, such as training and infra-structural development. She commended AID for "providing a highly valued program of assistance" in those areas.

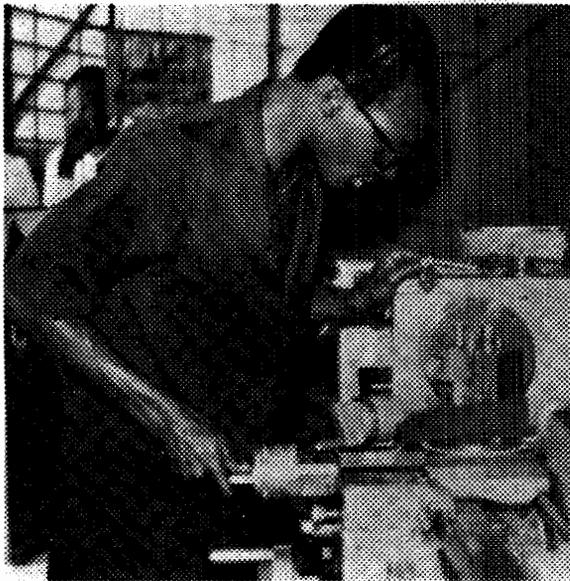
McLarty explained that JNIP's primary role is to promote and facilitate private investments in all sectors. JNIP emphasizes investments which earn or save foreign exchange, contribute significantly to reducing unemployment, use local raw materials, make joint ventures available, allow for skills and technology transfer, or present opportunities for creating linkage industries.

Within that context, JNIP is encouraged by AID's role in the CBI. Several projects already have begun or are in the planning stages. One loan is establishing a Caribbean Agricultural Trading Company, an inter-island marketing project which will stimulate increased trade and agricultural production in the Eastern Caribbean; another is creating a new, privately owned development finance company in Haiti; a loan to Jamaica provides investment funds for equity and debt financing for medium-sized agro-industrial and manufacturing enterprises. Grants are establishing a Caribbean Basin Information Network and supporting an emerging Twin Chamber program in which U.S. Chambers of Commerce are linked to business associations in CBI countries to stimulate trade and investment opportunities.

Responding to questions, Michael Farrell, the State Department private sector coordinator of CBI said



*At Bustamante Hospital's intensive care unit, AID Assistant Administrator Julia Bloch (right) discusses Project Hope's training program for nurse anesthetists with training director Dr. Chung Knight and Project Hope Vice President John Welsh.*



*A metal-working class at Clifton Vocational Craft Center.*

he was optimistic that Congress would approve the remaining provisions of the CBI soon.

#### AID Support of Local PVOs

After Assistant Administrator Julia Chang Bloch presented a discussion paper on AID support of indigenous PVOs, Thomas McKay, head of AID's Office of Private Voluntary Cooperation (PVC), moderated an important panel that looked at AID's work with indigenous PVOs, called IPVOs. ACVFA members raised numerous questions and comments, as did PVO representatives from Jamaica, other Caribbean nations and the United States. There was a decided preference for calling IPVOs local PVOs. One ACVFA member noted the need for an AID local PVO policy, but warned that it should not generate competition between U.S. and local PVOs.

Father Charlebois of Catholic Relief Services accused AID of having a double standard for U.S. and local PVOs. In response, Assistant Administrator Julia Bloch said that it took a year for the U.S. PVO policy paper to be finalized. "There are differences in AID's relationship with U.S. and local PVOs," Bloch said, "and these differences have to be recognized. We didn't want to delay the U.S. PVO paper further to resolve these differences."

Peter Davies, representing Meals for Millions/Freedom from Hunger Foundation, complimented AID for using a more participatory process in developing the policy papers.

Local PVOs want three things, said Starr Huffman of the National Association of Social Workers: communication, helpful advice, and speedy response with bridge grants, if necessary, to tide PVOs over until they receive their grants.

AID's mission director in Haiti, Harlan Hobgood stated AID does not "go in to work with local PVOs unless we go in for the long haul." But AID is reluctant to work with an organization with no long-term plan for its own financial independence. So, AID helps local organizations to spin off profit-making activities to provide self-sufficient continuation of services. Philip Schwab, AID's mission director in the Dominican Republic, said that because of the effective role that PVOs played after the 1979 hurricane that the Dominican Republic government is turning over its own resources to help PVOs become more effective.

"This open discussion is the first step in the policy making process," Bloch said, "on which AID has begun work, with ACVFA and close collaboration with U.S. and local PVOs."

#### PVO—Business Relations

The ACVFA meeting included two days of business development seminars with U.S. and Caribbean busi-

ness and PVO representatives exploring ways for PVOs to encourage and ease private investment in the region and, secondly, to improve collaboration and consultation of PVOs, businesses and Caribbean government officials in many areas.

Representatives from the Jamaica National Investment Promotion, Ltd., attended the meeting and there were presentations by Control Data-Jamaica, Kingston Free Zone, Jamaica Small Business Association, the Cooperative Credit Union of Jamaica, Witherspoon International Inc., Overseas Private Investment Corp., National Association of Black Consulting Engineers, Port of Oakland Authority's Port Operations and Maintenance Training Program and members of several chambers of commerce in the Caribbean region.

One seminar participant said at the conclusion, "If any American firm wants to make a business investment in Jamaica, they know exactly where to go and to whom to talk by the time they leave here."

#### The Role of Women in Development

A discussion on the role of women in development was led by Sarah Tinsley, director of AID's Office on Women in Development—fittingly on International Women's Day. Presenting AID's official policy paper on Women in Development Tinsley assured her audience that AID remained committed to the thorough integration of women into its development projects. Women's contribution to national economies, she said, must be recognized because women produce goods and services; perform 60-80% of all agricultural work in developing countries; and "influence the pace of national population growth."

An overflow crowd attended an evening session on women in development, moderated by Michaela Walsh, president of Women's World Banking in New York. Descriptive presentations were given by Millie Leet, president of the Trickle Up Program which operates largely in the Caribbean; Vivien Derryck, vice president for international programs, National Council of Negro Women; and Elise Smith, president of the Overseas Education Fund.

A women in development ACVFA subcommittee, headed by Walsh, was created as a result of the meeting.

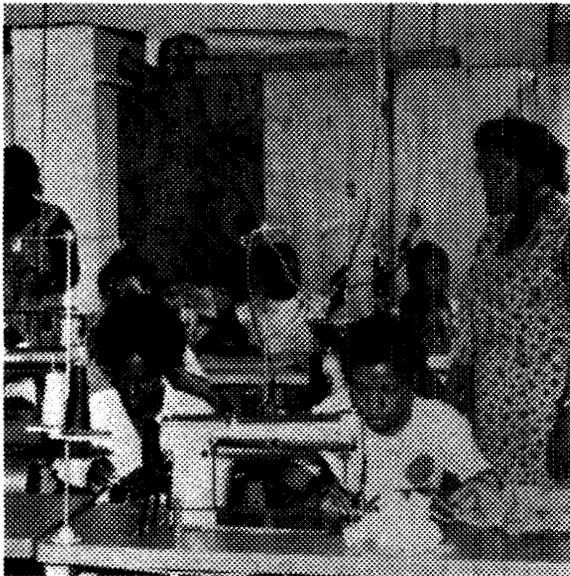
#### A Look at the Action

Local PVOs welcomed the chance to showcase their activities, while Jamaicans were impressed with the knowledge and sensitivity of the meeting's participants and ACVFA members.

As part of the conference program field visits were planned to numerous PVO projects. One of the more popular sites was the Bustamante Hospital for Children, a government-established and operated 200-



*Conference participants visit Clifton Day Care Center.*



*Participants visited AID-funded Operation Friendship, where Jamaicans attend an industrial sewing class.*

bed hospital. PVOs have provided the hospital with a school and the recently completed Nancy Reagan Library. Begun in 1963, Bustamante serves mainly the Kingston area.

Mrs. Edward Seaga's selfless work with the hospital, along with the S.O.S. Children's Village and the Street Corner Project was honored with the presentation of the first Humanitarian Service Award to be given by AID and ACVFA. David Guyer, President of Save the Children Federation, presented Mrs. Seaga with the award, which cited her "deep dedication and outstanding personal commitment to the improvement of the health and well-being of the children of Jamaica."

The Clifton Vocational Craft Center, another site visited, was established in 1975 by the Clifton New Testament Church of God. The \$30,000 to build the training center was donated by church members who were concerned about the alarmingly high number of young, unemployed, and unskilled persons in the Kingston area. When the center opened in 1976, it offered courses in dressmaking, tailoring, and upholstery and had 10 students. Since then, the center has trained 20 dressmakers, 18 tailors, and 10 upholsterers who have found employment in their fields. Funds from the Canadian government and AID have financed construction, machinery, and equipment. The Jamaican government provided a grant to assist students with lunch fees and bus fares.

Another of the many sites visited was Operation Friendship, funded by a \$500,000 AID operational program grant, designed to provide life skills to 730 young men and women. Operation Friendship, founded in 1961 by the Methodist Church, provides training in automobile mechanics, woodwork, metal work, and industrial sewing. AID funds provide training in air conditioning, refrigeration, electrical installation, small appliances repair, and lithography. Operation Friendship's training center is strategically located near factories—the potential employers of its graduates.

The overwhelming consensus was that the conference was long overdue. Most participants felt at least one of the quarterly ACVFA meetings should be held outside the United States to give them an opportunity to see first-hand what is going on in the field and to hear more from indigenous PVOs. As one participant put it: "It is encouraging for us all to visit these projects and see how those who have little or nothing, still have the guts to try to make it work for each other."

The Jamaican newspaper *Daily Gleaner* summed it up in its editorial headline: "A Worthy Conference."

*Angela Wright is AID's chief of news and media relations in the Office of Public Affairs.*

# BOOKCASE

## Death at an Early Age: Culture, Sex Discrimination and Mortality in South Asia

"The Endangered Sex: Neglect of Female Children in Rural North India," by Barbara D. Miller, Cornell University Press, 1981. \$17.50

A review by Maureen Norton



In the developing world, death at an early age is a grim, yet common element of everyday life. It does not, however, strike all children

with equal intensity. In parts of South Asia, death takes its toll more frequently on girls than on boys. This disquieting phenomenon has been commented on over several generations, including our own, by both casual observers and professional demographers. During the colonial era, the high rate of female infant mortality was, at times, the result of outright infanticide. Now it appears to stem from more subtle forms of neglect. It is rooted in a way of life—religious, economic and agricultural—which can be sustained, according to the traditional Indian view, only through the contributions of the male members of the community. Thus the culture contributes to an intense preference for sons and neglect of daughters, at times with fatal consequences.

These disturbing facts are ably documented by Barbara Miller in her book, *The Endangered Sex: Neglect of Female Children in Rural North India*. This book is a comprehensive attempt to answer a question that has long puzzled observers of Indian development: Why, in some parts of India, are there considerably more boys than girls?

### Evidence of Female Infanticide

Miller starts out by saying "my goal is to explain how and why

there are fewer females than males in North India and then to show how that situation might be changed." She begins by describing British official and foreign observers' reports of female infanticide in India. The practice was first discovered in 1789 among the Rajkuman clan of Rajputs in eastern Uttar Pradesh. Miller quotes a typical foreign observer's report of its day.

"In conversation with some of the zamindars, . . . (Thomason) happened to refer to one of them as the son-in-law of another. This mistake raised a sarcastic laugh among them and a bystander briefly explained that he could not be a son-in-law since there were no daughters in the village. Thomason was told that the birth of a daughter was considered a most serious calamity and she was seldom allowed to live. No violent measures were however resorted to, but she was left to die from neglect and want of food."

Although not universal, female infanticide was practiced mainly in the Northern part of India from Gujarat in the west to the eastern border of present-day Uttar Pradesh. It appears, moreover, that the practice was confined primarily to the higher "social groups in the North, though this point is debatable." The 1881 Northwest Provinces Special Census Report named seven "suspect" caste groups: Jats, Gujars, Tagas, Ahars, Rajputs, Minas and Ahirs. All are middle and upper-level castes.

Reports of Indian villages of tribes lacking even one female child continued until the British government was moved to act. In 1870, the Infanticide Act was passed, abolishing the practice.

### Ratio of Females to Males - Past and Present

With this as background, Miller proceeds to look at past and present empirical evidence on the ratio

of female to male infants and children. To study the past, she examines data on juvenile sex ratios<sup>2</sup> found in censuses taken between 1871 and 1901. The censuses consistently report a strikingly higher number of boys than girls in some provinces. The 1872 census, for example, reveals a juvenile sex ratio of 120 in Bengal (what is now West Bengal, Bihar, Orissa and Bangladesh) and the Northwest provinces and 118 in what is now Uttar Pradesh and Punjab. These figures are generally considered unusually high. She concludes this analysis by stating "a review of other decennial censuses reveals that neither the pattern of imbalances in the sex ratios nor the explanation proposed for them changes very little through the years."

In assessing variations in contemporary Indian juvenile sex ratios, Miller gets to the heart of her argument. She acknowledges that variation in India sex ratios by region is a well-accepted fact (documented most recently by 1961 census data); however, social variation is not. Her study is the first comprehensive attempt to examine variations in the juvenile sex ratio according to socio-economic status. Her hypothesis is that "(Hindu) castes of the upper (propertied) level . . . will display juvenile sex ratio patterns characteristically different from those of the lower level."

Analyzing 1931 census data (the last census to provide sex ratio data by class/caste categorization), she finds strikingly high juvenile sex ratios of 156, 127, and 123 among those castes selected to represent Northern propertied groups—Jats, Rajputs and Ahirs. However, lower sex ratios (i.e., increasingly greater numbers of females to males) were found for Northern unpropertied and Southern propertied and unpropertied groups. In short, she concludes that there are indeed unusual juvenile sex ratio patterns in India according

to socio-economic status—but amends her original hypothesis. “Thus the hypothesis that all propertied groups will have higher juvenile sex ratios than unpropertied groups has been amended: *such applies only to the North.*”

### The Immediate Cause: High Female Infant Mortality Patterns

What are the immediate and broader causes of the skewed population balance in the North? The hypothesis of course is that differential infant mortality rates rather than errors in enumeration, inaccurate reporting, or concealment of females, etc., is the immediate cause of imbalanced sex ratios.

Infant mortality data appear to bear this point out. Miller's review of mortality statistics from two studies undertaken in the North [the Khanna study (1965) and Narangwal study (1975), both in Punjab] and two studies undertaken in the South [Kottayam study (1975) in Kerala and the Vellore study (1978)] provides compelling evidence to support the notion that unbalanced juvenile sex ratios are indeed the result of sex differentials in mortality. That is, there are considerably more male children in the population in some areas because more female children die. “The female (infant) mortality rate in both Punjab studies is much higher than the male mortality rate. In the Vellore study, female (infant) mortality is slightly lower than that for males. . . .” For *childhood mortality patterns* the results are similar. In the Northern studies, female childhood mortality rates are almost twice as high as male mortality rates. In the Vellore study, only slightly higher rates for females were observed.

### Cultural Determinants of Imbalanced Sex Ratios

Having thus documented that

infant and child mortality rates are higher for girls in the North than for boys, the author goes on to examine broader cultural variables that may be linked to high rates of female infant mortality.

Are there differentials in child care for boys and girls—namely in food, medical care and love? Yes, says the author. She cites a variety of recent research that documents the differentials. With respect to medical care, for example, data from hospital reports (1962 - 1978) in 10 cities show that hospital admissions in the North are heavily weighted in favor of boys.

Equally important, and less amenable to change, are the cultural values that contribute to a preference for sons and disregard for daughters. The author examines high marriage costs for girls, the need for sons for transmission of family property and name, and women's participation in agriculture production. Since the two former variables have been the subject of considerable discussion in other literature they will not be dealt with here.

Miller's unique contribution is an examination of the role of women in agricultural production and its link to the value given to female infants. She compares levels of female labor participation in the Northern wheat producing areas (where there is low female labor demand) with the Southern rice producing areas (where there is high female labor demand). Is there a correlation between juvenile sex ratios and female labor participation, she asks.

A statistical test of correlation between the two variables proved to be “moderately strong and highly significant considering the number of districts involved.” Marshalling ethnographic and village survey data to support the statistical significance test, the author concludes that “where female labor

participation is high there will always be high preservation of female life, but where female labor participation is low, female children may or may not be preserved.”

### Other Research

Miller has written a thought-provoking and disturbing book. It appears to be one of the few comprehensive attempts to answer long-standing questions regarding the skewed male/female population balance in India. She has marshalled an impressive array of empirical evidence to support each step of her argument. Doubtless the study will generate some controversy, much debate and, hopefully, further research. Most importantly, her analysis of gender-based differences in child care and their fatal consequences has important implications for planning and implementing development projects, especially those involving maternal child health and family planning. The book is of value to both the field worker and the policy maker.

Nevertheless, some data and recent research raise questions concerning the validity of the book's major argument—imbalanced sex ratios are to be found primarily among India's Northern propertied groups. In attempting to prove this hypothesis, the author may have missed an opportunity to examine the wider dimensions of the problem. In short, there are some data to suggest that the neglect of female infants and children is a problem that may be considerably broader than her analysis would suggest.

In 1978, Asok Mitra, professor of population studies, Jawaharlal Nehru University, New Delhi, published a two volume analysis of Indian population trends. Mitra's study, *India's Population: Aspects of Quality and Control*, includes a section entitled “Implications of the Sex Ratio in India's Population.” Interestingly, while Miller's analysis

of census data ends with the 1931 census, Mitra's analysis begins at the turn of the century and continues to 1971. While the data Mitra presents are not disaggregated by caste or class, the trends he reports do suggest other important and disturbing dimensions of the sex ratio problem. The all-India census data he analyzes suggest: (1) there is a "steadily deteriorating ratio over the last one hundred years and particularly since the beginning of the current century of females to males in the Indian population"; (2) the widening of the gap between number of females and males in the population "seems to have dramatically accelerated since 1951"; (3) the "selective neglect" of female infants and young girls birth to age 9 "has been growing between 1941-50 and 1961-70 compared to male mortality"; and (4) most disturbing, the South, which traditionally had a low sex ratio by Indian standards over the decades, has displayed higher female mortality since 1931. In the South, Mitra observes, "the comparative deterioration in female mortality vis-a-vis male mortality at almost all selected ages between 1931 and 1961 hits one in the eye."

In sum, beyond indicating the growth magnitude of the problem, Mitra's aggregate data suggest that the sex ratio imbalance may not be primarily confined to North India as Miller contends.

As for the imbalance being found in a particular class, recent research from Bangladeshi Muslim families suggests that gender-biased child care<sup>3</sup> and higher female mortality trends in that country are not necessarily linked to any one socio-economic level. In an article entitled, "Sex Bias in the Family Allocation of Food and Health Care in Rural Bangladesh"<sup>4</sup> the authors note that excess female over male mortality was, in their study, "higher among poor than among rich households during 1974, but rich families had

higher excess female child deaths in 1977."

All of this is simply to say that the determinants of gender-biased child care are exceedingly complex, clearly require considerable further research and involve far-reaching policy implications. Sex-biased juvenile mortality is independent of family income level, but related to more deep-seated cultural and social factors, then simply increasing the economic resources available to the family may not reduce excessive female juvenile mortality rates. Even if clinic services are free (as in the Bangladesh case noted above), the most disadvantaged (female infants) may not be reached if the culture places higher value on the survival of males.<sup>5</sup>

The problem involves the status of women and in all a much greater emphasis on education and literacy. Barbara Miller has undertaken a valuable study for the development community. Possibly the book's most important contribution is its implicit theme: In development planning, the women's question is important not necessarily because of its association with enlightened notions of equity, but due to the very real and negative development consequences that may occur if it is neglected. ■

1. According to 16 secondary sources cited by Miller.

2. Sex ratio refers to the number of males in the population per hundred females. The generally accepted normal range for the sex ratio at birth is 104-107. The sex ratio at birth for the United States is 105.

3. The research found that: (1) for those under 5 years, male calorie consumption exceeded female consumption by an average of 16%, adjusted for weight; (2) diarrheal treatment rate of male children (children brought to clinics for treatment by their guardians) was 66% higher than for females, while the incidence levels of the disease for both sexes was similar.

4. Lincoln C. Chen, Emdadul Haq and Stan D'Souza, *Population and Development Review* 7, No. 1 (March 1981).

5. These ideas are elaborated in the Bangladesh article.

*Maureen Norton is chief (acting) of the evaluation division, Office of Development Planning in AID's Bureau for Asia.*

## CARD CATALOGUE

### Women and Development in Lesotho

Gay, Judith S.  
U.S. Agency for International  
Development  
Bureau for Africa  
1982, 84 pp.

Report reviews the status and role of women in Lesotho, a uniquely "women in development society" due to the high rates of male migration to neighboring South Africa. Against a summary of Basotho women's traditional familial, social and economic roles, the author explores women's expanding horizons in Lesotho. A brief final chapter analyzes how conservative or innovative Basotho women are and whether they are decision-makers. Development planners are advised to be knowledgeable of Basotho women, not judge them by western standards, include them in development projects, and make sure that these projects benefit women of all socioeconomic levels. A nine-page bibliography is included.

Paper copy \$13.00  
Microfiche \$ 2.16  
PN-AAK-474

### Soybean Seed Quality and Stand Establishment Proceedings

Sinclair, J.B.; Jackobs, J.A.  
University of Illinois at Urbana-  
Champaign,  
College of Agriculture  
1982, 206 pp.

Presents the proceedings of a conference held to synthesize current knowledge on physical, biological, weather and storage conditions which affect soybean seed quality and, in turn, impact on stand establishment. The volume includes 19 invited papers, abstracts of 13 volunteered papers, 11 country reports from various Asian nations, and working group reports on

soybean production, crop protection, and seed storage. The importance of seed quality in expanding soybean cultivation in tropical and semi-tropical areas emerged as a major concern of the conference.

Paper copy \$28.60  
Microfiche \$ 3.24  
PN-AAK-592

### **Ecological Aspects of Development in the Humid Tropics**

U.S. Department of Interior, National Park Service; U.S. Agency for International Development, Bureau for Science and Technology; National Academy of Sciences, National Research Council  
1982, 52 pp.

Following a brief examination of tropical ecosystems, this report reviews three divergent strategies for exploiting tropical areas: leave them largely untouched; make substantial use of their timber resources; and convert them for use in food production and apply contemporary agricultural technologies. The authors suggest that development agencies support resource exploitation but give high priority to ecological assessment and planning. Included are specific recommendations for workshops and seminars that should be supported by development agencies. Summaries of the report in French and Spanish are provided.

Paper copy \$8.84  
Microfiche \$1.08  
PN-AAK-831

### **Land Resource and Land Use Classification Concepts and Methods**

Putnam, J.; Ackerson, K.; Witter, S.  
U.S. Department of Agriculture, Economic Research Service, Natural Resource Economics Division  
1982, ERS staff report

Report describes the concepts and methods used by AID's Comprehensive Resource Inventory and Evaluation System (CRIES) Project to classify and evaluate land in order to assist LDCs

with agricultural planning and policy analysis. CRIES uses two components—soil and climate—to identify geographic areas with homogeneous physical environments and to assess their potential for supporting agricultural endeavors. The report provides information on CRIES's information sources, methods, mapping and soil taxonomy and briefly describes its methods for developing information on existing land use or cover.

Paper copy \$4.55  
Microfiche \$1.08  
PN-AAK-955

### **Methodology of the Response Errors Project**

O'Muicheartaigh, C.A.  
International Statistical Institute.  
World Fertility Survey  
1982, 33 pp.

Reports on a cross-national project—based on studies in the Dominican Republic, Peru, Turkey, and Lesotho—to investigate the types and magnitude of response errors and their implications for past and future fertility surveys. The author outlines the World Fertility Survey's three-stage approach to estimating sampling and response errors: (1) conducting the main survey by randomly allocating subsamples to interviewers; (2) re-interviewing subsamples; and (3) subsequent re-interviewing in cases where discrepancies were earlier observed. A general statistical model, based on the work of Fellegi, for calculating response errors is included.

Paper copy \$4.42  
Microfiche \$1.08  
PN-AAK-765

### **Corneal Xerophthalmia and Keratomalacia**

Sommer, A.; Sugana, T.  
Johns Hopkins University International Center for Epidemiologic and Preventive Ophthalmology  
1982, 8 pp.

Findings from ophthalmic and pediatric

examinations of 162 Indonesian children with nutritional keratopathy are reported. Surface corneal changes ranged from mild haziness through generalized xerosis and formation of thick, keratinized plaques. Severity increased with age; diffuse stromal edema occurred early. Following massive doses of vitamin A, most of the children regained central corneal clarity in at least one eye. The authors suggest that unique mechanisms, beyond mere surface changes, account for some corneal changes in vitamin A deficiency. Contrary to reports, infection seems to have little involvement. Twenty-four color photographs of corneal abnormalities are included.

Paper copy \$1.04  
Microfiche \$1.08  
PN-AAK-894

### **Evaluation of the Malaysian Fertility and Family Planning Survey 1974**

Yatim, M.M.  
International Statistical Institute  
World Fertility Survey  
1982, 35 pp.

Evaluates the quality of the data on age distribution, nuptiality, fertility and infant mortality obtained in Peninsular Malaysia during the 1974-75 Fertility and Family Survey. Among the author's findings are that the age distribution was close to that in 1970, age misreporting was insignificant, age at first marriage was rising and both fertility rates and the rate of infant and child mortality were falling. The text is highlighted by 26 tables and 20 diagrams.

Paper copy \$4.68  
Microfiche \$1.08  
PN-AAK-764

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# INTERNATIONAL CALENDAR

## MAY

**16-18** Joint Commission on Agricultural Research and Development meeting, sponsored by AID, Washington, DC

**16-19** Symposium on Agricultural Chemicals of the Future, Beltsville Agricultural Research Center, Beltsville, MD. Contact: Beltsville Symposium VIII Office, Room 233, Building 001, BARC-West, USDA, Beltsville, MD 20705

**16-27** Committee on Food Aid Policies and Programs meeting, sponsored by the Food and Agriculture Organization, Rome, Italy. Contact: Food and Agriculture Organization, Plant Protection Service, Via delle Terme di Caracalla, Rome, Italy 00100

**17-19** 2nd International Conference on Photovoltaics Business Development, sponsored by Monegon, Ltd., Geneva. Contact: Peter Grambs at (301) 258-7540 or Monegon, Ltd., Photovoltaics Business Development Conference, 4 Professional Drive, Suite 130, Gaithersburg, MD 20879

**17-19** International Development Conference, 30th Anniversary, Washington, DC. The theme is "World Development in Perspective: What Can America Do?" Contact: International Development Conference, Room 400 1120 19th St., NW, Washington, DC 20036; telephone (202) 659-1555

**22-27** Symposium on the Applications of Remote Sensing to Resource Management, sponsored by the American Society of Photogrammetry and the Renewable Natural Resources Foundations. Contact: Peter A. Murtha, Faculty of Forestry, University of British Columbia, Vancouver, B.C. V6T 1W5 Canada

**23-26** Agri-Energy Roundtable annual meeting on "Beyond Food Energy Security: New Markets and Technologies in World Agri-Business." Geneva. Contact: (202) 887-0528

**23-27** International Federation for Housing and Planning (IFHP) 1983 International Conference on "Lower Cost and Better Quality in the Urban Environment: A Realistic Aim?" in Lisbon, Portugal. Contact IFHP, Wassenaarseweg 43, 2596 The Hague, The Netherlands

**24-26** 2nd International Conference on Ecology and Environmental Quality, Jerusalem, Israel. Contact: Prof. H.I. Shuval, Chairman, Israel Ecological Society, Hebrew University-Hadassah Medical School, PO Box 1172, Jerusalem, Israel

**24-27** Latin American seminar on Earthen Buildings in Seismic Areas, Lima, Peru. A regional followup to the 1981 international workshop, technical meetings will be held May 23-24. Contact: INTERTECT, PO Box 10502, Dallas, TX 75207; telephone (214) 521-8921

**25-28** Food, Water and Climate annual forum, sponsored by Aspen Institute, Wye Plantation, MD. Contact: (301) 758-2666

**26-31** American Association for the Advancement of Science, annual meeting, Detroit, MI. Contact: AAAS Headquarters, 1101 Vermont Ave., NW, 10th Floor, Washington, DC, 20005, telephone (202) 842-9530

**28-30** Economic summit for leaders of seven industrialized countries, hosted by President Reagan, Williamsburg, VA

**29-June 10** Pheromones in Pest Control meeting, Kuala Lumpur, Malaysia. Contact: The British Council, PO Box 539, Kuala Lumpur, Malaysia

**30-June 2** Inter-State Committee to Fight Drought in the Sahel (CILSS)/Sahel Institute/Cooperation for Development of Africa (CDA) Agriculture Research Consultative Conference, Ouagadougou, Upper Volta

**31-June 6** U.N. High-Level Committee on the Review of Technical Cooperation Among Developing Countries, New York, NY

## JUNE

**1-2** Council of the Americas' 14th Washington Conference on "U.S.-Latin American Relations: The Effects of the Global Economic Crisis." Department of State, Washington, DC. Contact (202) 298-9016

**1-4** Association for Advancement of Policy Research and Development in the Third World meeting on "International Policy and Politics," Washington, DC. Contact: Mekki Mtewa at (202) 636-6720

**1-22** ILO (International Labor Organization), general conference, Geneva

**2** International Business Center Conference on "World Capital Markets." Boston, MA. Contact: (617) 542-0426

**3-5** 17th Annual Bengal Studies Conference, Institute of World Affairs, Salisbury, CT 06068

**5-9** 1983 World Council of Credit Unions (WOCCU) membership council meeting, Seoul, Korea. Sponsored by the Asian Confederation of Credit Unions and the National Credit Union Federation of Korea. Contact: WOCCU, PO Box 391 Madison, WI 53701

**6-10** International meeting on Production and Formulation of Pesticides in Developing Countries, sponsored by the World Health Organization, Food and Agriculture Organization, U.N. Environment Program and U.N. Industrial Development Organization, Geneva, Switzerland

**6-July 30** The Oxford Program of Development Workshops 1983, Shelter Provision and Settlement Upgrading, Oxford, England. Contact: Geoffrey Payne or Patrick Wakely, Oxford Program of Workshops, Oxford Polytechnic, Headington, Oxford, OX3 0BP U.K.

**7-10** International Oral Rehydration Conference, sponsored by AID in cooperation with the International Center for Diarrheal Disease Research/Bangladesh, UNICEF and the World Health Organization's Diarrheal Disease Control Program, Washington, DC. The conference will focus on better ways to combat dehydration caused by diarrhea, particularly oral rehydration therapy. Contact: Mary Beth Allen, ICORT Conference Staff, Room 3534, Department of State, Washington, DC 20523, or telephone (202) 632-0226

*Information for International Calendar was largely provided by Cook, Ruef & Assoc., Inc., of Washington, publishers of International Agenda.*

*Any additions or corrections should be addressed to "International Calendar," Horizons, Room 4890 NS, Washington, DC 20523 or telephone (202) 632-4330.*

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