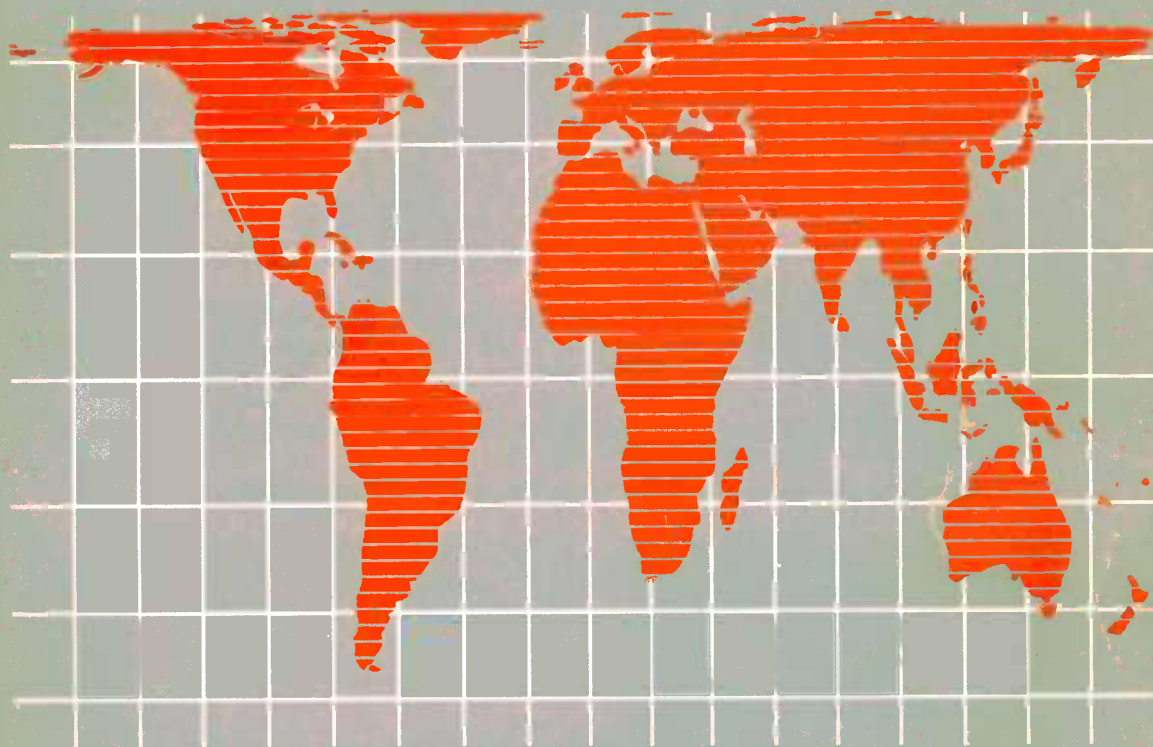
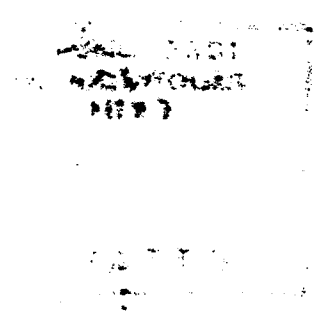


# IDRC ANNUAL REPORT 1984 / 1985



ARCS



The map on the front cover is based on the Peters Projection rather than the more familiar Mercator Projection.

The Peters Projection introduces several innovative characteristics: an accurate rendition of the proportion of the land surface area; graphical representation of the entire world surface, including the polar regions; and the Equator is placed at the centre of the map. The distortions that do appear are distributed at the Equator and the Poles; the more densely settled earth zones, it is claimed, appear in proper proportion to each other.

The map is printed courtesy of Dr Arno Peters of the University of Bremen.

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## Annual Report 1984–1985

### International Development Research Centre

The International Development Research Centre (IDRC) is a public corporation created by the Parliament of Canada in 1970 to stimulate and support scientific and technical research by developing countries for their own benefit.

The fields of investigation to which IDRC gives its financial and professional support include: farming; food storage, processing, and distribution; forestry; fisheries; animal sciences; energy; tropical diseases; water supplies; health services; education; population studies; economics; communications; urban policies; science and technology policy; and information systems.

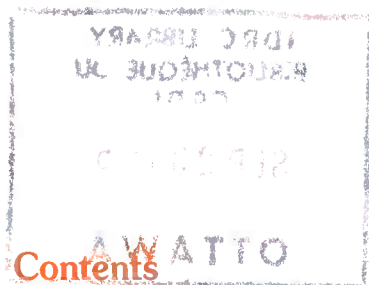
Although IDRC is funded by the Canadian Parliament, its operations are guided by an international 21-member Board of Governors. Under the IDRC Act, the chairman, the vice-chairman, and nine other governors must be Canadian citizens; in practice, 6 of the remaining 10 governors are from developing countries.

The programs that the Centre supports help developing countries build the scientific competence of their institutions and their researchers so that these countries can work to solve their own problems. Research projects supported by the Centre are, therefore, identified, designed, conducted, and managed by developing-country researchers in their own countries, to meet their own priorities.

IDRC helps to create and supports international research networks through which developing countries can learn from each other, share common experiences, and conduct similarly designed studies in areas of mutual concern. The Centre also promotes cooperation between developing-country researchers and their counterparts in Canada.

IDRC has its headquarters in Ottawa, with regional offices in:

- Singapore (Southeast Asia, East Asia, and the Pacific);
- New Delhi, India (South Asia);
- Nairobi, Kenya (Eastern and Southern Africa);
- Cairo, Egypt (Middle East and North Africa);
- Dakar, Sénégal (West and Central Africa); and
- Bogotá, Colombia (Latin America and the Caribbean).



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INTERNATIONAL DEVELOPMENT RESEARCH CENTRE  
CENTRE DE RECHERCHES POUR LE DÉVELOPPEMENT INTERNATIONAL

June 1, 1985

The Rt. Hon. Joe Clark, P.C., M.P.  
Secretary of State for External Affairs  
Lester B. Pearson Building  
Ottawa, Ontario

Dear Minister:

In accordance with Section 22 of the International Development Research Centre Act, I have the honour to transmit herewith the Annual Report of the International Development Research Centre for the fiscal year ending March 31, 1985 which includes the financial statements of the Centre and the Auditor General's report thereon.

Yours sincerely,

Dr. Janet M. Wardlaw  
Chairman  
Board of Governors

## Introduction

During this past year, Canadians have been repeatedly confronted with the severity of the problems that afflict the poorer countries of the world. Our attention was seized, and most dramatically, by the famine in Ethiopia. Television recorded this tragedy by focusing its cameras on bodies ravaged by hunger and on faces immobilized in despair. The suffering of October 1984 was not in some remote other world, but here in our own living rooms. The response was generous but, even as Canadians reached for their chequebooks, they asked why such tragedies can still occur in some parts of the world while others have achieved remarkable control over the technologies of food production and distribution.

Although the tidal wave of compassion came with the famine in Africa, it was preceded by other events that awakened the concerns of many Canadians.

### Debt

One of these other events was the Commonwealth Finance Ministers' Meeting in Toronto in September 1984. This too was watched closely by the media, and its work was presented at some length on television and radio. The figures for the indebtedness of many developing countries are staggering, especially when it is realized that, among the most afflicted countries, there are several like Brazil and Mexico that are well endowed with natural resources and that, 10 years ago, seemed to be on the brink of major economic achievement. To a degree, this obscured the fact that the burden of debt also jeopardizes the future of many countries that have less potential for economic recovery. According to tables published by the World Bank, there are 22 countries whose external debt exceeds 50% of their gross national product; of these, 16 are in Africa.

There was the inevitable concern that Canadian banks might be imperiled if the indebted countries were pushed to the point of default, but many thoughtful Canadians were also demanding to know how such a situation could have arisen. The financial and trading systems set up in the late 1940s had permitted an enormous expansion of international economic activity for more than two decades, and they had even withstood the first impact of the oil-price shocks of the 1970s. Many Canadians believed that the systems were equipped with mechanisms to maintain balance, and they were dismayed to discover how much this balance had been tilted.

Figures showed that the prices of the commodities exported by developing countries had fallen drastically at the same time as the prices of their imports were rising. Clearly, there is something wrong — morally wrong as well as economically wrong — if the international market imposes even greater poverty on societies that are already poor. Thus it is not enough

merely to refinance, or even to forgive, a debt that cannot be paid: we must also ask how the trading system can be changed to make it more equitable in the future.

### **Population pressure**

The International Conference on Population, held in Mexico City in August 1984, spotlighted yet another set of issues. In the 10 years since the first such conference was held in Bucharest, the human species has made progress in extending its average life expectancy and in seeking to balance this with a reduced fertility. However, such progress in some parts of the world, particularly in Asia, has not yet been matched in most of Africa. There, it is true, improved health services have extended life expectancy in most countries but, in general, the birth rates remain very high and the pressure on available resources becomes ever more intense. In Kenya, for example, in the last 10 years, life expectancy has increased from 50.3 to 55.9 years, but birth rates have remained about stable at 53 per thousand.

It is understandable that parents living at a level of bare subsistence will often see advantages in having more children: the work of even a very young pair of hands can more than compensate for what the child consumes. Canadians know that our own early immigrants were similarly motivated to produce large families. However, Canadians are also concerned about the predictions that are made for the still rapid growth of the world's total population over the next 50 years and its potential for engendering conflict over access to a limited supply of resources. Although encouraged by what has happened in some parts of the world, they are impatient to see that the benefits of this experience be carried to those other regions that might be able to apply it.

### **Political insecurity**

Of all the images from developing countries that appear on our television screens, the most consistent is the one that portrays armed conflict. On the one hand, we may deplore the fact that media correspondents do not pay more attention to constructive achievements but, on the other, we must admit that the conflicts are real and that they have disastrous effects on countries that have struggled to achieve economic and social progress.

Civil war is the most destructive of the maladies that can afflict a society. When we take a historical perspective, we are stunned by the senseless slaughter that was manifested in gladiatorial contests and in wars of religion. Will mankind be spared to be equally amazed by the cruelties of war between rival political ideologies? Such wars are often the product of internal economic and social insecurity, but they are disastrously exacerbated when the contestants are given ideological labels and become identified as proxies in the conflict between superpowers.

The civil wars in Afghanistan, El Salvador, and Nicaragua are now portrayed in terms of the East-West ideological conflict, and they are prolonged by the interventions of other parties. In each case, however, these conflicts began because of an internal political insecurity that is itself a manifestation of poverty and economic exploitation. Africa has not been spared: civil strife continues in Angola, Chad, Ethiopia, Mozambique, the former Spanish Sahara, and the Sudan. The ideological dimension has, to a greater or lesser degree, been introduced in all these conflicts but, perhaps,

the most telling point is that strife and famine go hand in hand — each reinforces the impact of the other. Many Canadians believe that, if such conflicts are to be avoided in the future, renewed efforts must be made to secure a more equitable distribution of resources, both among countries and within countries.

### **Links**

None of these concerns stands alone, for each is linked to the others, and underdevelopment has many facets. Today, attention still largely centres on the famine in Africa, and many Canadians see this as essentially an environmental problem. Although the immediate cause of the famine is the absence of rain, Canadians know that food production need not be totally at the mercy of climatic fluctuations. Our own experience of disastrous droughts in the 1930s forced us to seek methods to manage the environmental impact of such events.

Different specialists see the African problem from different angles. Engineers talk of the need to conserve runoff or to tap underground water resources. Soil scientists see the problem as a consequence of erosion and blame it on the destruction of forests or the depredations of domestic animals. Social scientists point to the demographic shifts that have taken place in Africa, as well as the changes of behaviour that result as traditional life-styles are supplanted. Television shows us the despair of the African refugee. The Canadian response is an assertion of hope that such events can be managed and that, in this interdependent world, it is our duty to work with Africans to banish the spectre of starvation.

### **Long-term effort**

Canadians believe that we should help, but they ask whether we yet know how to do so effectively. Certainly there have been many aid programs that have failed to achieve their objectives. There are also very positive achievements, however. Literacy rates in developing countries have been improving over the past 20 years. Health services are still inadequate, but life expectancies have improved in most countries; smallpox has been eradicated. Communications have improved, and virtually everyone has access to a transistor radio. People in developing countries now know that they need not be condemned to a life of squalor — that very awareness is the incentive that drives their own efforts toward development.

Thirty years ago, when we heard of famine, it was likely to be in South Asia. Today India, for example, has reached self-sufficiency in food production and is becoming a significant industrial power. Thirty years ago, there could also have been local famines in Africa, but we might not then have known of them until it was too late to mobilize relief.

Thus, development has both its short-term and its long-term components. When famine strikes, grain must be shipped in to ensure the survival of those that are affected. When a nation is unable to meet its debts, it cannot be treated like a corporation, be declared bankrupt and dissolved; financial institutions must change their procedures and provide new forms of relief. When internal conflicts threaten to destroy the fabric of society, the international community must mobilize its diplomatic efforts to remove the external pressures that hinder a peaceful settlement. However, there are no



short-term solutions for the underlying problems of inadequate nutrition, debilitating disease, lack of education, unmanageable population growth, environmental deterioration, and adverse trading patterns. To see improvements in these areas, we must look at time spans of 20 or 30 years.

When progress is made in these more basic areas, it often depends on the application of knowledge that had been acquired 20 years before. The development of self-sufficient agriculture in India has largely resulted from the use of higher-yielding varieties of wheat and rice, varieties that plant breeders were producing in the 1950s and early 1960s. Research in primary and adult education carried out in those same decades laid the foundations for more recent improvements in literacy. Transistors were first produced in the 1950s, but it was only in the 1970s that transistor radios became cheap enough to be universally acquired in rural communities. Vaccination was invented by Jenner in 1796, but it took almost two centuries before smallpox was eradicated. Oral rehydration therapy, a simple but effective technique for the treatment of severe diarrheal disease, was developed in the late 1960s, but millions of infants still die each year for the lack of its application.

### **IDRC**

The International Development Research Centre was not established as an instrument for bringing rapid relief in emergency situations. To the extent that it possesses applicable knowledge and experience, it stands ready to give professional advice to those governmental and voluntary organizations that bear the burden of responding to such situations.

On the other hand, IDRC was established to support research and thus to build the knowledge on which long-term development can be based. At any one time, it can be said that there is a certain amount of established knowledge that is banked and ready for application. As that knowledge is applied, it is as though we are drawing down our capital assets. If long-term development is to proceed smoothly, these capital assets must be replenished. IDRC's main role is to support research, particularly applied research in developing countries, that will contribute to this replenishment.

IDRC acts both by reinforcing the capacities of developing countries to carry out research and also by supporting projects to solve particular problems. In the narrative that follows, IDRC's activities are described, sector-by-sector. By itself, each item may produce only a tiny increment for the store of knowledge that will be needed in the future.

IDRC makes no claim to having a set of reliable prescriptions to ensure that all research will achieve useful results. As in any scientific endeavour, we must often proceed by trial and error. IDRC attempts to learn as much from its failures as from its successes. The programs described in an annual report are those that were initiated in the year that has ended. However, the pattern evolves and, by maintaining a spirit of innovation and of responsiveness to new ideas, IDRC aims to use its resources for the maximum benefit of the longer-term development process. Those resources have been contributed by Canadians and voted by Parliament. The results will not appear on television tomorrow but, if we are spared the nuclear holocaust, they could make life better for many millions as we move toward the next century.

## Agriculture, Food and Nutrition Sciences

### 90 projects, \$22.0 million

Since the early 1970s, IDRC has supported pioneering research on rice-based cropping systems. Funds were provided through the International Rice Research Institute (IRRI) for the Asian Cropping Systems Network (ACSN), and directly to six member countries: Bangladesh, China, Indonesia, the Philippines, Sri Lanka, and Thailand. A good example of the growth and development of the cropping systems research within this network is provided by the national program in the Philippines.

Starting in 1972, the University of the Philippines at Los Baños (UPLB), with support from IDRC, conducted research on multiple cropping and its adoption by farmers in six selected communities. The farmers' response was enthusiastic and adoption of the recommended multiple-cropping technology was rapid, resulting in substantial improvements in both productivity and the nutritional status of the target communities. For example, between 1972 and 1976, the number of cooperating farmers rose from 29 to 656. Their crop-intensity index rose from 1.65 to 2.1 and their multicropped area rose from 48 to 75%. This project was renewed for three phases and the Philippines has now developed its own internal network for cropping-systems research: in 1984, there were more than 100 national research sites.

As a result of the holistic research approach adopted by the ACSN, the scientists quickly came to appreciate the importance of livestock in the rice-based systems, both as a source of power and in contributing 20–40% of farm income. By mid-1982, the ACSN scientists were confident enough in their methodology to start planning the involvement of animal scientists; the network launched a series of crop-livestock projects and the ACSN became the Asian Farming Systems Network (AFSN). The first crop-livestock project to receive IDRC support within the AFSN started in April 1984 in the Philippines.

Vegetable oil is an essential component of the diet, but one that is in very short supply in many developing countries. Therefore, large amounts of scarce foreign exchange are spent annually on importing edible oils. In spite of this, oilseed crops, other than groundnuts and soya beans, lack a strong international research backing. To help promote collaboration, and thereby strengthen national oilseed research programs, IDRC established an international network in 1981 with an advisor based in Ethiopia. The network, which covers all the countries in Eastern and Southern Africa, the Middle East, and South Asia, includes 12 IDRC-supported projects in Egypt, Ethiopia, India, Malawi, Mozambique, Sri Lanka, Sudan, and Tanzania. The first issue of the *Oil Crops Newsletter* was published in June 1984 and was widely disseminated to scientists in the Africa-Asia region and elsewhere. It contained a variety of technical and news articles together with reports on several of the projects within the network. The second issue is due to be published soon. The first workshop was held in Cairo, in September 1983, and was attended by 25 participants from 10 countries. The proceedings have been published by IDRC (IDRC-MR93e). This was followed by the second oil crops workshop in Hyderabad, India, in February 1985. The focus of this second workshop was two important but generally neglected oil crops:

sesame and safflower. A group of 38 scientists from 12 countries spent 4 days reviewing the latest research findings and considering ways in which their results could be validated by farmers and more widely disseminated to the farming communities.

A recent addition to the oil crops network, and one which brings a welcome new dimension, is a cooperative project linking scientists at the Ottawa Research Station of Agriculture Canada with network scientists in Africa and Asia. The project aims to develop reliable anther-pollen or ovule culture methods for the production of dihaploids in sesame, safflower, and niger seed (*noug*). The successful development of tissue-culture techniques that can be used by oil crops breeders in developing countries will help substantially to increase the efficiency of their efforts.

Pastures and forage constitute the most abundant and cheapest source of feed for ruminant livestock. Although almost 80% of the land in Latin America is used for grazing, productivity per animal is generally low, being about 30% of that in North America. Improvements can be achieved by the introduction of new, more productive, palatable, and nutritious grasses, legumes, shrubs, and trees and by better management. Pasture research, however, is a long and costly endeavour because, for the most reliable and applicable results, it should involve an evaluation of livestock productivity. Unfortunately, because of the cost and complexity of conducting grazing trials, they are rarely carried out in developing countries. Recognizing this situation, IDRC allocates considerable resources for pasture and forage research. Currently, funds are provided to five national pasture- and forage-research programs in Latin America and the Caribbean that are linked to the Tropical Pastures Network coordinated by the Centro Internacional de Agricultura Tropical (CIAT) in Colombia. Since early 1982, IDRC has also provided funds directly to CIAT to help support the network activities: this grant was renewed for a second phase in 1984. Standardized methods have been developed for the systematic evaluation of pastures, from small-plot germ-plasm introduction through to large-scale trials with animals. These methods are being successfully employed by many members of the network. In addition, germ plasm screened at CIAT and the national centres is being evaluated in different ecosystems in the region. Intensive short-term training has been provided to 12 Latin American and Caribbean scientists and the network members hold regular workshops and exchange information.

The Universidad Nacional Agraria la Molina in Peru has received IDRC support for pasture research since 1978. A ryegrass-clover association has been identified that yields, under irrigation, up to 18 metric tons of dry matter per hectare, at 15.2% crude protein. This association has been used as the basis of sheep-fattening production modules in which stocking rates of up to 25 head per hectare have been achieved with daily liveweight gains of up to 200 g. This compares with 1 animal per hectare, and daily gains of only 100 g, on native unirrigated pastures. This project has also provided very valuable training grounds: 15 undergraduate student theses have been conducted in the project.

The *fisheries program* continues to support research on increasing the supply of fish as food for people. Aquaculture in Asia, including mariculture and inland fisheries, offers continued opportunities for research support that,

in the long term, could transform these traditional practices — based in the past on trial-and-error approaches — into scientifically well understood food-production systems of the future. In some cases, increases in yield are possible with the use of existing technology, whereas new technology offers the best hope for increased production in others.

Research support emphasized the primary factors of a farmer's aquaculture operation — seed, feed, genetic improvement, and disease control. Continued support for the milkfish project at the Aquaculture Department of the Southeast Asia Fisheries Development Center (SEAFDEC) in the Philippines, genetic selection of freshwater fish in Thailand, and the use of aquatic weeds as a feed source in Thailand were undertaken. Increased support for research in fish health, diseases, and quarantine control was provided with new projects in Thailand and the Philippines to complement the existing projects in the other countries of the Association of South East Asian Nations (ASEAN).

In the past several years, the fisheries program has supported a variety of projects on the use of various types of simple enclosures for fish rearing. This work is expanding in a number of regions of the world. Small-scale systems offer potentially important opportunities to assist small-scale fishermen or other individuals with limited land or similar assets. Because existing water bodies are used, total costs should be lower than for pond- or larger-scale culture systems and sophisticated management skills are not required. Research involves on-site development and testing of different types of designs (flotation systems, cage netting, and anchoring) in relation to local environmental conditions and fish species used. Feeding complete diets, partial supplements, or no supplementary feed if the water contains sufficient natural feed are also important parameters for study. Finally, socioeconomic examination is needed of whether such systems can be operated profitably under local conditions, either as full- or part-time employment for people living close to suitable water bodies.

An IDRC workshop in Cairo, Egypt, is now set to expand this type of research in this region. An earlier workshop in Asia had developed projects in Indonesia, Malaysia, Nepal, the Philippines, Singapore, and Sri Lanka. In many tropical countries, the small-scale or artisanal fisheries sector is experiencing increasing pressure on the fish resources. The problems are many but, due to increased political awareness, increasing efforts are now being made by governments and regional and international agencies to address these issues. Increasing research support from the fisheries program is being directed to this sector. A recent IDRC-funded workshop in Santiago, Chile, has spawned a number of project ideas in the Latin American region that will be linked into a Latin American regional network on this topic complementing existing projects in Belize, Chile, and Colombia. Similar activities are developing in the African and Asian regions. Major research efforts are to quantify the resource — how much is caught by fishing — and to seek the optimum returns to the various groups identified as benefiting from the resource. Some tropical management models have been developed with the increased research results on fish life history, migration, and recruitment.

Little research has been carried out to date on improved selection and strain development that has typified earlier major yield advances in other types

of agriculture. Recipients are becoming increasingly interested in this topic and projects have been initiated recently in Chile, Indonesia, and Thailand to examine oysters, carp, and tilapia respectively. In association with staff of Dalhousie University in Canada, an Asian regional 2-week training course in Singapore was recently completed. Although new "super strains" of fish are being discussed as possibilities for the future, much applied research at experimental stations and in farmers' ponds remains to be done. A region-wide Asian network of projects is now being suggested, based partially on the 5-10% increased growth rates of tilapia recorded in Thailand.

Within the *forestry program*, a new initiative last year was the forest research management course, which sought to improve the management skills and broaden the background of senior research managers. A 3-week course held at the National University of Singapore (NUS) in late 1984 was attended by 30 participants from 10 Asian countries including China: most were directors of forest research institutes or deans of forestry faculties in universities.

Since 1981, a priority field within the forestry program has been the support of applied research on bamboo and rattan in Asia. Significant progress has been made. This extensive, but previously informal, network of projects was last year consolidated by the appointment of a part-time network coordinator. The network includes 10 active and interrelated projects in seven Asian countries.

Drying or desiccation is an important means of preserving food commodities of all kinds. Cereals, roots, fruits, vegetables, fish, and meats can all be treated in this way to avoid mould, fermentation, and putrefaction. It is one of the most common traditional food-preservation practices encountered in rural developing areas. The most common method of drying is to expose the commodity to the sun and wind until an equilibrium moisture condition is reached. This may be a satisfactory solution for small quantities of food harvested during the dry season when adequate sunshine is available. Increasingly, however, larger volumes of produce entering the market system to feed growing urban populations require some form of controlled environment or mechanical drying process to reduce losses and maintain a reasonable level of quality.

Because biological deterioration sets in quickly, drying must take place as soon as possible after harvest. Two main problems are encountered: each product has distinctive drying characteristics requiring flexible and controllable drying equipment, and costs of artificial drying are high. These problems are being partially addressed in a project at IRRI where a Korean engineer has designed a versatile dryer that can be constructed of locally available materials and burns rice hulls or other biomass wastes. IDRC has provided support for further development, operational testing, and application of this dryer design in Asia. Its most unique feature is a vortex wind machine that extracts moist air from the dryer compartment without the need for a fan and engine — expensive operating parts of conventional dryers that constrain their adoption at the farm level. This equipment design, once fully developed along with appropriate operating and management systems, has the potential for wide application. Low operating costs, local construction, and adaptability to a number of food commodities are likely to be its principal selling features.

Postproduction research continues to pursue the introduction and testing of village milling systems, including the dehuller design originally developed with IDRC support at the Plant Biotechnology Institute of the National Research Council in Saskatoon, Canada. This activity is concentrated principally in the semi-arid areas of Africa where the drought-resistant crops of sorghum and millet are staple foods in rural areas. It responds to a decline in consumption of these crops, even where they are well adapted and preferred by local consumers, because the task of manual dehulling has become too onerous and time-consuming. The development and introduction of an economical village-level milling system, including dehuller, grinder, and other peripheral equipment, can create a better market and utilization of traditional grains. Women in rural areas invariably respond enthusiastically when told of or shown the products of the dehuller.

During the past year, projects involving the local testing and introduction of dehullers and milling systems have been approved in Botswana, the Gambia, Sénégal, and Uganda. The Botswana project is a follow-up on refinement of technical aspects of the earlier successful introduction of dehullers. The Gambia and Sénégal projects involve local fabrication of the machines as well as their introduction. Each of these projects includes the training and development of experienced action teams that can identify local demand for dehulling services, work with communities on installing milling equipment, train local machine operators, and provide a follow-up trouble-shooting service. In addition to these projects, a workshop was organized to review experience with the dehuller in countries where it has been tested. The results are being published as a technical report on the state of knowledge and experience with small-scale mechanical dehulling of traditional crops.

Large quantities of food in developing countries are handled and processed by small local enterprises that provide employment and income as well as a service to many producers and consumers. Sometimes these activities are also carried out by producers. These businesses are usually family operated, use simple traditional hand methods, and may employ up to 25 workers. Products are of low quality, production methods inefficient, and incomes marginal. The introduction of new equipment or processes to improve these operations often has implications well beyond those of installing technical changes and putting them into operation. A methodological approach for working with these small enterprises that has been put together by the *postproduction program* takes researchers into factories to observe and measure problems first hand. They rank any constraints in order of importance, tailor experiments to find practical solutions quickly, and work with factory owners and workers in introducing improvements.

Several projects of this type have been approved recently. In Guatemala, cooperatives for small-scale coffee producers have difficulty drying their coffee because of heavy rains during the harvest period and therefore must sell it wet to distant processing plants at low prices. IDRC has provided support to the Instituto Centroamericano de Investigación y Tecnología Industrial (ICAITI), a regional institution for industrial research and development, to assist these cooperatives in developing and introducing small dryers and accompanying management procedures so they can sell dried coffee and increase their incomes. The same institution received a grant to work with a

banana-producers' cooperative in Honduras to process reject bananas, which are normally wasted. In Chile, the Universidad Austral was given a grant to work with small-scale shellfish producers to improve their handling and processing procedures, develop new processed products, and test market them. In Malaysia, a project was initiated to improve the operations and product of small-scale fish-cracker producers, and in the Philippines, many small-scale producers of fish sauce are expected to benefit from research on changes to their traditional practices that attempt to speed up the process and improve hygiene in their plants.

A new initiative within AFNS in the past year was the creation of a program of work in agricultural economics. The new program has focused on integrating agricultural economists into the ongoing research activities of the AFNS and Social Sciences divisions. During the 1984–1985 fiscal year, seven projects, all linking agricultural economists with biological and physical scientists, were supported. The majority are part of ongoing regional or national networks.

## **Communications**

### **16 projects, \$1.1 million**

The program activities of the Communications Division encourage more effective communication of the results of scientific research conducted in the Third World. The ultimate objective of these activities is to improve and increase the dissemination of worthwhile research results to support overall development efforts.

The Division's program activities are divided into two areas: scientific communication and media development. Projects within the *scientific communications* program focus on assisting national and regional research centres to communicate their research findings more effectively to scientists in developing countries and to extension workers, teachers, and others who can use or modify the results in their own work. Projects within this sector emphasize the development of strong publishing programs; however, support is also available to improve other means of disseminating research results. *Media development* initiatives assist journalists in the print and electronic media in the Third World to improve their ability to report on and interpret the results of scientific investigations and their effects on the lives of their audiences. The Division's efforts have involved training in science writing for radio, television, and print journalists and support for science features produced by news agencies in and for the Third World.

The Division supports projects throughout the developing world. In Asia, assistance was provided to the Royal Nepal Academy of Science and Technology (RONAST) to allow it to disseminate the results of relevant scientific research to both literate and nonliterate Nepalese through a regular science features service for the local print media and a complementary science service for radio broadcast. Other significant Asian projects funded during the year included training in science writing for 17 Asian radio journalists conducted at the Asia Pacific Institute for Broadcasting Development in collaboration with the writing and production team from the Canadian Broadcasting Corporation's science radio program "Quirks and Quarks"; a training program in science writing for Filipino journalists



conducted by the Philippines News Agency; and the commencement of a major collaborative project between the International Rice Research Institute (IRRI) and the University of Toronto Press to train 48 editors from national research centres in the Third World in the editing and publishing of scientific books and brochures.

In Latin America, the Pontificia Universidad Católica de Chile received support to produce three educational videotapes on improved fishing and marketing techniques that were used in training programs coordinated through local fishermen's cooperatives. The Universidad Javeriana conducted a training program for teachers from Andean schools of communication that addressed training methodology, curriculum development, and the teaching of science writing. Funds were also made available to the Centro Regional para el Fomento del Libro en América Latina to study the publishing industries and reading habits in Venezuela and Peru as part of national efforts to implement policies to encourage and promote book production and utilization.

Within Africa, support was provided to a range of training programs in science writing for practicing Anglophone and Francophone African journalists. These included a collaborative project with the Centre d'études des sciences et techniques de l'information (CESTI) in Dakar and the Studio-École de la Voix du Zaïre (SEVOZA) in Kinshasa that provided training to 13 radio journalists from Central and Western Africa; a training project in Tanzania organized by the Ministry of Information and Culture, which imparted science-writing skills to 30 mass media practitioners and government information officers; and a program with the Nigerian Mass Communications Association to provide specialized science-writing training to 20 journalists from Cameroon, Gambia, Ghana, Liberia, Nigeria, and Sierra Leone. A major workshop was also funded in Dakar on scholarly publishing in West Africa to identify constraints to publishing and to formulate specific plans of action to address these problems. Several projects are expected to develop from this activity in the coming year.

### **Cooperative Programs** **29 projects, \$6.3 million<sup>1</sup>**

The Cooperative Programs Unit was established during the 1980–1981 fiscal year and became an autonomous division in 1983–1984. The principal objective of the Division is to promote collaboration between Canadian research institutions and those in developing countries for projects concerned with various development issues. With this principal objective are three others of importance. First, to develop the scientific and technological research capacity of the participating institutions in the Third World; second, to create channels of communication among scientists; and third, to encourage Canadian research groups to take a tangible interest in a wider and more varied range of Third World concerns.

Budgetary allocations fall under two distinctly different headings: research activities in cooperation with the Centre's program divisions and research activities directed by the Cooperative Programs Division itself.

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<sup>1</sup> In addition, a further 28 projects for a value of \$7.3 million funded by Cooperative Programs are administered by other program divisions.



The first area of specialization created by the Division was in earth sciences. Interest is concentrated mainly on geology, geophysics of superficial deposits, hydrology, hydrogeology, and geology applied to engineering.

Typical of projects supported in this area of specialization is an investigation of agrogeology in Tanzania. Maintaining soil fertility is a serious problem in most developing countries and replacing plant nutrients available in soils with fertilizer is expensive. However, the application of locally occurring minerals can make available small amounts of nutrients in a process similar to that of the natural weathering of rock. Researchers from the Department of Land Resource Science at Canada's University of Guelph and the Department of Soil Science at Tanzania's Sokoine University of Agriculture will examine the fertilizer potential of phosphate, carbonate, and some types of igneous rocks in Tanzania. The findings may have direct benefit to small-yield farmers growing maize and beans in providing an inexpensive alternative fertilizer.

A second area of specialization defined in 1984-1985 is that of technology for local enterprises. This program emphasizes applied research and technical development as they relate to small- and medium-sized industries in developing countries. Interest is concentrated mainly on product and process improvement and innovation, management of technological change, and finally environmental concerns as related to local enterprises.

A novel project involving cooperation between the University of Saskatchewan in Saskatoon and the Fundação Sousa Marques in Rio de Janeiro, Brazil, will investigate industrial steel alloys. Pressure vessels, tubes, and other components that operate under high pressure and temperature extremes are subject to a type of damage known as creep deformation. Creep deformation occurs under conditions of constant load or stress and is one of the factors that determines the useful life of industrial components. The two research teams will investigate existing methods of measuring creep deformation and apply the most appropriate method to evaluate the damage and remaining life of selected installations in Brazil. The information obtained will enable Brazil to plan replacements and manage existing productive capacity more efficiently.

In addition to these two programs, the Division stresses other fields of research identified by institutions in the developing countries and derived from their own evaluation of their priorities. The participation of Canadian institutions in IDRC-sponsored cooperative research projects is not limited to the universities. Governmental research institutions are also involved. One interesting project is being carried out jointly by the Royal Scientific Society of Jordan and the Environmental Technology Centre of Environment Canada. This project deals with the development and testing of a cost-efficient system for monitoring air pollution suited not only to Jordan but also to other developing countries using equipment designed by Environment Canada. Projects must also fall within Canadian fields of specialization. The Division also emphasized the training of scientists in developing countries, particularly on-the-job training.

## **Fellowships and Awards**

### **22 projects, \$2.6 million**

The broad purpose of the Division continues to be the training and upgrading of researchers, managers of research, and administrative personnel from developing countries, with a view to enhancing the growth of an indigenous research capability in the developing world. The main emphasis remains on individuals from developing countries; however, some support continues to be offered to Canadians.

The Division continued to diversify its programs in response to training demands and regional priorities.

Two new mechanisms were introduced: institutional development and new initiatives. Institutional development addressed training needs in a more comprehensive manner in projects with universities, granting councils, and other institutions in developing countries. This new mechanism enabled the Division to support the Visayas State College of Agriculture, a regional school in the Philippines responsible for organizing and coordinating root-crop research in the country, to upgrade professional qualifications of its staff through degree and nondegree training.

The second mechanism, new initiatives, allowed the Division to experiment with new areas of work such as research on training, research management training, the training needs of China, and other training needs that called for a flexible, responsive approach. New initiatives allowed the Division to support staff from the Department of Agriculture in Bhutan to study for bachelor's and master's of science degrees. The project will develop a core staff trained to undertake a coordinated program of on-station and on-farm research on rice — a strategic food crop in the country.

A new feature of the Division's program, begun in 1983–1984, was the cofunding of training projects with the other program divisions within the Centre. This program collaboration continued to grow in 1984–1985, and supported such activities as training in demographic research for 10 African, Middle Eastern, and Asian students at the Cairo Demographic Centre in Egypt. The students, junior and mid-level government employees, will follow diploma and degree studies involving research on marriage and birth rates.

A complete listing of awards and fellowships is given on page 73.

## **Health Sciences**

### **56 projects, \$7.5 million**

Health is an integral part of development. The immense and growing burden of disease and health-destroying living conditions that rests upon the peoples of developing countries impedes all efforts toward their social and economic progress. The diseases of the tropics continue to spread, while growing populations of rural and urban poor compete, with little success, for the resources available for health care.

To improve the social and physical well-being of the poor in the developing world requires research to identify and assess new ways of creating greater awareness of health issues within communities and to evaluate

different means through which communities build and use health services. Research is also needed to develop the tools required by the rural poor to acquire and maintain an acceptable standard of health. The Health Sciences Division focuses upon these issues through four interrelated sectors: maternal and child health, tropical and infectious diseases, water supply and sanitation, and occupational health and environmental toxicology.

The *maternal and child health* sector has increased its emphasis on research related to perinatal health and high risk pregnancy, breastfeeding and other infant-feeding practices, the impact on health of the supplementation of some important nutrients that are deficient, and the epidemiology of diarrheal diseases, which continue to be a major source of morbidity and mortality in the developing world.

In Brazil, one project focuses on the identification of maternal and environmental risk factors for low birth weight and perinatal death in an economically deprived area as a basis for action to reduce and prevent such occurrences. In a southern section of the country, another project is studying the role of various feeding patterns in infant deaths due to diarrhea, with reference to breastfeeding, the use of breast-milk substitutes, and weaning practices.

In Indonesia, in collaboration with other agencies, the Division is supporting a study on the effect of fortifying monosodium glutamate (MSG), which is widely used in cooking, with vitamin A with respect to infant and child morbidity, especially blindness and mortality. Another study in that country is attempting to identify high risk factors in pregnancy.

In Mali, a study is underway to identify the various factors that play a role in the timing and manner of weaning in an effort to plan appropriate interventions to reduce infant mortality.

Several studies are being supported on the topic of diarrhea. In Chile, another project will look at the effects of iron supplementation of milk powder to see whether this practice — aimed at providing nutrition to children suffering the effects of diarrhea — perhaps increases rather than decreases the severity of diarrhea.

The projects this past year demonstrate heightened activity in the subsectors of maternal and child health and nutrition-related diseases. There was somewhat reduced activity in health-related aspects of contraception and family planning.

The *tropical and infectious diseases* sector of the Division has been involved in research projects in four broad subsectors: tropical diseases, infectious diseases, sexually transmitted diseases, and vaccine-related studies.

In Kenya, a project is studying the immunological means of diagnosis of African sleeping sickness in a cooperative program between the University of Victoria, B.C., and the Kenya Trypanosomiasis Research Organization. A tuberculosis research project in Brazil on evaluating short-term intermittent chemotherapy and cost effectiveness of various regimens is nearing completion. As part of the research network on sexually transmitted diseases in Latin America, a new study on penicillinase-producing *Neisseria gonorrhea* (PPNG) has just been implemented in Cuba.

In Thailand, a joint project with the U.S. Agency for International Development (USAID) and the World Health Organization (WHO) has just begun to establish a research centre for vaccine trials, the first such institution in Southeast Asia.

In addition, the sector has continued its support both to the WHO Diarrheal Diseases Control Programme and to the United Nations Development Programme (UNDP)-World Bank-WHO Programme on Research and Training in Tropical Diseases, which has made remarkable achievements since its inception in 1977.

Many internationally funded projects focus on increasing accessibility to drinking-water sources with only marginal consideration of the quality of the water for human consumption. Conventional water-quality testing methods and source classification schemes can be expensive and often require sophisticated laboratory equipment and trained personnel that are not readily available in many developing countries. The research supported during 1984 in the *water supply and sanitation* sector, therefore, related primarily to the area of quality control of drinking water.

Researchers at the University of Singapore, the Universiti Malaya in Malaysia, and the Mahidol University in Thailand are investigating the effectiveness of two innovative methods for screening drinking-water sources and for developing a classification scheme for categorizing drinking-water sources. They will also develop a field kit and procedures manual for the most appropriate test. It is expected that similar projects will begin soon in Latin America and North Africa.

A related concern is the means of making water potable at the community and household level. In Botswana, researchers at the Rural Industries Innovation Centre are investigating the operating characteristics of six portable solar stills designed to desalinate surface water for human consumption and are training nomadic dwellers of the Kalahari Desert to assemble, operate, and maintain the stills. In Thailand, researchers at Chiang Mai University are studying the efficacy of solar irradiation as a low-cost means of disinfecting drinking water as an alternative to boiling or adding chemical disinfectants.

The role of women as managers, researchers, implementors, and beneficiaries of water supply and sanitation projects was discussed at a seminar on women's issues in water supply and sanitation sponsored by the water supply and sanitation sector held in Manila, the Philippines, in September 1984. The consensus of the 43 female participants, many of whom were IDRC-supported researchers, was that additional applied research that focuses on the role of women in this field is needed. The sector is expected to support several research projects developed during the seminar relating to this topic.

Developing countries in the process of industrialization continue to display a growing interest in the problems of industrial accidents and occupational diseases. Among the projects supported by the *occupational health and environmental toxicology* sector is a study being carried out in Kenya on the causes of dock handling accidents in the Port of Mombasa with a view to improving working regulations and practices. Another Kenyan

project will examine workers' exposure to solvents, a very important class of industrial poisons, in the paint-manufacturing and printing-publishing industries.

In the field of environmental toxicology, a Colombian institution is being supported to study the effects of the use of the herbicide Paraquat, which is known to cause diseases of the respiratory system. Although only one project has been funded in this field in the past year, concern over the health effects of herbicides is growing and it is expected that more projects will be forthcoming.

It had been proposed in 1983 to introduce a sector for *health services research* that would support studies in such areas as delivery of health care, management and planning of health services, and introduction of technology into the health care system. The activities of this sector in the past year have, in fact, been handled by existing sectors. The evolution of this proposed sector will be the object of further discussion.

### Information Sciences 44 projects, \$7.8 million

The information needs of Third World countries are as diverse and important as are their development problems. Information is essential in today's world for effective action and problem solving. The programs and projects of the Information Sciences Division cover a wide range of subjects and serve many types of users in the Third World — from fishermen in Indonesia and medical practitioners in Colombia to ministers of government in Togo. These programs are organized into three main groups: scientific and technical information, socioeconomic information, and information tools and methods.

Among science and technology topics, agricultural information in relation to food production remains the priority. The 14 projects related to agriculture this year included support to an information centre in the Philippines on root crops for food production, to a centre in the Ivory Coast dealing with postharvest management of foods, to a regional centre in Egypt specializing in information about land improvement and reclamation, and to the information activities on wheat and small grains of the Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT), the acclaimed international agricultural research centre in Mexico. The technology information program, which was dormant in recent years, is being redeveloped. A joint project with the Caribbean Development Bank will extend technology consultancy services to local entrepreneurs and will contribute to improved productivity, quality, pricing, and marketing. In addition to the larger projects in other areas, exploratory activities were supported toward the development of future projects in the fields of energy, marine sciences, and earth sciences information.

The economic and social problems of the Third World are growing more severe. To address these problems, leaders in the countries require information for decision-making. Work has been carried out jointly with the Commonwealth Secretariat to develop and test software that will help small- to medium-sized countries to collect, process, and analyze external debt

information for financial planning and management. The pilot study is being launched in Sri Lanka. The Ministry of Planning, Industry and Administrative Reform in Togo is organizing its information services to build effective links with the Pan-African Documentation and Information System (PADIS) to improve use within the government of socioeconomic information relevant to Togo and to disseminate this information to the public.

The programs in health information emphasize health services and water and sanitation. Medical technicians throughout Thailand are improving their skills by reading newsletters and other information packages produced by our project. The national water and sanitation authorities in Peru are improving practices through improved information services to local authorities. In the area of population information, projects were supported in Brazil, Chile, Mexico, and Peru for national centres participating in the Latin American Population Documentation System (DOCPAL), which is coordinated by the Economic Commission for Latin America (ECLA).

Although information dissemination and use are the principal outputs of most information sciences projects, *information tools and methods* are also important. Methodologies for using local indicators to predict famine crises are being developed and tested for the Sudan. In addition to external-debt software, work is being supported in Chile on the use of microcomputers to use demographic information extracted from the large regional data bases for local and national planning. With our assistance, the Chinese are developing bibliographic systems that will handle data in Chinese as well as in Roman characters.

The information community that IDRC serves on behalf of Canada is in the Third World and their needs prevail. However, the Canadian information community has always been a willing partner in this work for consulting, training, and evaluation and for information and technology. This commitment is reflected by our *cooperative program* projects. For example, university, private, provincial, and federal institutions are participating in a remote-sensing project for China and Southeast Asia. The University of Waterloo is assisting the University of Lagos in Nigeria to map the Sokoto-Rima River Basin for better land use in the dry northeast of Nigeria. In Quebec, the Encyclopédie d'administration publique is helping to prepare a trilingual, development-oriented thesaurus in the field of international public administration.

The information needs of developing countries are indeed diverse and pressing. Although funds will never be fully adequate given the economic realities of the world, the Division will continue to identify and support those information activities in the Third World that will contribute to self-reliance and a long-lasting capacity of developing countries to improve their condition through more effective use of information.

## **Social Sciences**

### **124 projects, \$12.4 million**

The Social Sciences Division has devoted most of its energy to the development and management of projects, but it has also put special

emphasis on organizing workshops and meetings connected with research projects.

As in the past, the Division has continued to provide support for projects that deal with specific development problems, and whose results will be directly advantageous to Third World countries. In every case, the Division ensures that the methodology selected is appropriate to the main purpose of each research initiative, whether it is an attempt to reach a better understanding of a social reality, to predict the results of an actual or future situation, or to collect information on a specific subject.

This year, the Division has paid special attention to Africa, both in the orientation of its efforts and in the number of projects. Central America, likewise, has been the focus of new research activities. It remains the purpose of the Division to be active in those developing regions of the world where the need is most urgent.

The basic aim of IDRC has always been to centre its research efforts on the needs of the rural population of the Third World. It is recognized, however, that the Third World is urbanizing very rapidly. In Latin America, the point has already been reached at which two-thirds of the population live in an urban environment. In Africa and Asia, too, the rural exodus and the growth of population are leading to rapid urbanization. The *urban policy program* has been designed to enable the Centre to meet the needs caused by these trends.

Some of the research projects in the urban policy program deal with the impact and quality of the urban infrastructure in the Third World. At Dakar in Sénégal, large areas of the city have only minimal equipment and services, whereas others are quite plainly overequipped. The Centre de recherches pour l'habitat, l'urbanisme et l'aménagement du territoire will identify these disparities in services and present an in-depth, up-to-date study to the government. Similarly the Environmental Studies Institute of the University of Khartoum in Sudan will stress the gaps in the health services of Greater Khartoum. In Bolivia, an attempt will be made to study the vulnerability of the cities of Potosi and Santa Cruz to natural disasters such as those that have already harshly affected the population. Although it is not possible to predict them, at least the risks will be better known and it will be possible to take more effective precautions.

The Centre de recherche en architecture et en urbanisme of the Université d'Abidjan in the Ivory Coast will try to gain a better understanding of the problems of urban development in the country. The resulting data will be matched with those from other research projects on urban growth in Africa under the guidance of the Institute of Environmental Studies of the University of Toronto, thanks to support from the Cooperative Programs Division.

The *economics* section of the Division has continued to direct its efforts to both macroeconomic and microeconomic studies of all its support activities. Research teams from Malaysia, the Philippines, Thailand, and other countries, coordinated by the Institute of Southeast Asian Studies (ISEAS) of Singapore with the participation of the North-South Institute of Ottawa, are trying to better assess the effect of restrictions imposed upon trade

by the developed countries on the outlook for industry and commerce in both developed and developing economies.

In Asia also, although on a smaller scale, a network of researchers in the social sciences and in biology will devote themselves to the improvement of artisanal fishing. Similar efforts are also being made in Latin America and Africa.

The *education* section has been responsible for organizing several regional meetings in South and Southeast Asia to better understand the contributions made by nongovernmental organizations (NGOs) to their community. Should full-scale research programs be undertaken to evaluate and clarify the results of the activities of the NGOs? The Institute for Research, Education and Social and Economic Information of Jakarta in Indonesia will attempt, through four case studies in the education of underprivileged rural and urban groups in the country, to make a start in that direction. Also in Asia, a team of researchers will be assembled specifically to investigate what has been achieved by the "free universities" in, among other countries, Indonesia, Malaysia, and Thailand.

With the purpose of supporting research already in progress in the sector, the *population and development research program* held a meeting on the topic of foreign contract labour. Similar studies are in progress in Pakistan and in the Middle East. On the other hand, the problem of refugees still requires sustained attention, particularly in Asia, where it is widespread and of long standing, and Africa, where there are five million refugees. At the moment, attempts are being made to identify the characteristics of these populations better and to determine how research taking place in that environment might best improve their lot.

The *science and technology* unit has brought together research teams from Argentina, China, Costa Rica, and the Philippines to study and compare the methods of evaluation and innovation in technology applied in energy campaigns in those countries. This has been undertaken so as to reach a clearer understanding of the nature and extent of the needs for energy and to compare the widely differing choices of types of energy and technology available to satisfy various needs. This research is based on the habits and choices in energy that are current among users. Lastly, the Energy Research Group (ERG), funded by the Centre and the United Nations University, has completed the establishment of its secretariat, received more than 100 reports that it had commissioned, and accumulated more than 4000 documents. In the fall of 1985, ERG will complete a report on its work derived, among other sources, from two meetings held in the course of the year, the first in the spring in Singapore and the second in Ottawa in December.



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## Projects for which funds were approved during the fiscal year 1984–1985<sup>1</sup>

### Agriculture, Food and Nutrition Sciences

#### **83-0123 FOOD LEGUMES NORTH AFRICA (ICARDA)**

For the International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria, to develop improved cultivars of faba beans, chickpeas, and lentils and to encourage their adoption together with improved farming practices. \$599 300 — 36 months.

#### **83-0141 FUELWOOD PLANTATIONS (ZAMBIA)**

For the Ministry of Lands and Natural Resources, Lusaka, to identify fast-growing tree species and develop improved management practices appropriate for large-scale plantations. \$192 200 — 36 months.

#### **83-0227 THREE STRATA FORAGE (INDONESIA)**

For Universitas Udayana, Denpasar, to enable its Department of Nutrition and Tropical Forage Sciences to develop and evaluate an improved land-crop-animal management system in Bali. \$216 000 — 60 months.

#### **83-0282 PHOSPHATE FERTILIZERS (IFDC-WEST AFRICA) — PHASE II**

For the International Fertilizer Development Center (IFDC), Muscle Shoals, USA, to identify efficient phosphate fertilizers agronomically and socioeconomically appropriate to Mali, developed from indigenous phosphate deposits. \$322 500 — 24 months.

#### **83-0287 FISH DISEASE (PHILIPPINES)**

For the Bureau of Fisheries and Aquatic Resources, Quezon City, to develop a national research program to increase production of freshwater- and brackishwater-cultured fish by preventing, controlling, and treating fish disease. \$501 600 — 36 months.

#### **83-0291 FISHERIES DEVELOPMENT (COLOMBIA)**

For the Fondo Colombiano de Investigaciones Científicas y Proyectos Especiales Francisco José de Caldas, Bogotá, to update information on the status of fisheries resources, fishing operations, and market-

ing infrastructure on the northeast Caribbean coast as a basis for a practical model of fisheries development for small communities. \$187 200 — 18 months.

#### **83-0300 REGIONAL SEED CENTRE (ZIMBABWE)**

For the Zimbabwe Forestry Commission, Harare, to provide Zimbabwe, Botswana, Kenya, Madagascar, Malawi, Rwanda, Swaziland, Tanzania, Uganda, and Zambia with access to sources of certified forest seed for research and development purposes, by developing facilities for processing, storing, testing, and distributing quality seed of known origin within the region. \$340 950 — 36 months.

#### **84-0015 UPLAND RICE STORAGE (SIERRA LEONE) — PHASE II**

For the Ministry of Agriculture and Natural Resources, Freetown, to enable its Rice Research Station to field test improved on-farm rice storage systems and to determine and reduce postharvest losses. \$110 100 — 36 months.

#### **84-0016 DEHULLER DEVELOPMENT (SÉNÉGAL)\***

For the Société industrielle sahélienne de mécaniques de matériel agricole et de représentations, Dakar, and the Centre national de recherches agronomiques de Bambey to develop a dehuller that can be manufactured in Sénégal and is suitable for village-level processing of local grains. \$303 200 — 36 months.

#### **84-0020 RICE POSTHARVEST TECHNOLOGY (THAILAND)**

For the Ministry of Agriculture and Cooperatives, Bangkok, to assess and promote improved technologies for paddy drying and rice milling and storage under a variety of local conditions. \$370 600 — 36 months.

#### **84-0021 CROPPING SYSTEMS (JAMAICA)**

For the Instituto Interamericano de Cooperación para la Agricultura, San José, Costa Rica, to enable the Ministry of Agriculture of the Government of Jamaica to initiate and implement a structured farming-systems research program in two different ecological zones of the St Catherine Land Authority. \$375 700 — 36 months.

<sup>1</sup> Asterisks indicate that the contract between IDRC and the recipient may not yet have been signed.

**84-0024 MEAT PROCESSING (PAKISTAN)**

For the Pakistan Council of Scientific and Industrial Research, Karachi, to improve and develop the production of low-moisture beef products using mechanical and solar dryers. \$181 600 — 48 months.

**84-0026 RICE FARMING SYSTEMS (IRRI-BHUTAN)**

For the International Rice Research Institute (IRRI), Los Baños, Philippines, to assist Bhutan in the development and introduction of appropriate technologies to increase productivity in rice-growing areas and, consequently, the income and nutritional status of small-farm households. \$690 200 — 60 months.

**84-0027 ALLEY CROPPING (NIGERIA) — PHASE II**

For the International Livestock Centre for Africa, Addis Ababa, Ethiopia, to develop and document integrated crop-livestock alley-farming systems suitable for small farms in West Africa. \$251 500 — 24 months.

**84-0028 BY-PRODUCTS NETWORK (ILCA)**

For the International Livestock Centre for Africa (ILCA), Addis Ababa, Ethiopia, to develop an African network in support of research on utilization of crop residues and agroindustrial by-products for animal production. \$405 100 — 36 months.

**84-0031 BY-PRODUCTS (EGYPT) — PHASE III**

For the University of Alexandria to develop improved animal-production systems for two villages in the Egyptian Delta using low-cost feed rations of local by-products. \$299 600 — 36 months.

**84-0038 SOIL RESEARCH (IBSRAM)**

For the Australian Centre for International Agricultural Research, Canberra, to provide the International Board for Soil Research and Management (IBSRAM), Canada, with core funding to cover its initial operating costs. \$100 000 — 18 months.

**84-0039 HIGHLAND OIL-CROPS IMPROVEMENT (ETHIOPIA) — PHASE II**

For the Institute of Agricultural Research, Addis Ababa, to develop improved oil seed production technology, agronomic practices, and higher and stable yielding varieties acceptable to both producers and consumers. \$337 500 — 36 months.

**84-0040 FARMING SYSTEMS (ETHIOPIA)**

For the Institute of Agricultural Research, Addis Ababa, to develop a methodology for selecting and introducing appropriate farming-system innovations aimed at increasing livestock productivity and crop yields. \$325 400 — 36 months.

**84-0044 HIGHLAND AFFORESTATION (PERU) — PHASE III**

For the Instituto Nacional Forestal y de Fauna, Lima, to identify suitable tree species and to develop techniques for establishing tree plantations on margin-

al agricultural sites in the Andean highlands. \$340 920 — 36 months.

**84-0045 ARID-ZONE AFFORESTATION (PERU)**

For the Instituto Nacional Forestal y de Fauna, Lima, to develop appropriate techniques for the establishment of irrigated forest plantations for forage, wood production, shelter, and erosion control in the arid coastal lowlands. \$247 040 — 36 months.

**84-0046 TISSUE CULTURE/RATTAN (MALAYSIA)**

For the Ministry of Primary Industries, Kuala Lumpur, to enable the Forest Research Institute, Kepong, to develop effective techniques for mass propagation of commercial rattan to meet the increasing demand for planting material. \$120 690 — 36 months.

**84-0047 KATCHA HOUSE IMPROVEMENT (BANGLADESH)\***

For the Bangladesh Agricultural Research Council, Dhaka, to enable the Forest Research Institute to develop simple, low-cost techniques that could extend the useful life of Katcha houses or rural dwellings. \$78 850 — 36 months.

**84-0048 BAMBOO PRESERVATION (INDONESIA) — PHASE II**

For the Universitas Gadjah Mada, Yogyakarta, to develop improved, inexpensive techniques to extend the durability of bamboo products. \$55 400 — 36 months.

**84-0066 AFRICAN AGROFORESTRY NETWORK (ICRAF)**

For the International Council for Research in Agroforestry (ICRAF), Nairobi, Kenya, to strengthen the capability of agriculture and forestry institutions in intertropical Africa to generate appropriate agroforestry technologies for improving existing land-use systems. \$521 080 — 24 months.

**84-0075 GOATS AND SHEEP (ZIMBABWE)**

For the University of Zimbabwe, Harare, to enable its Department of Animal Science to develop improved techniques for sheep and goat rearing acceptable to farmers in Zimbabwe's communal areas. \$236 600 — 36 months.

**84-0076 LIVESTOCK PRODUCTION SYSTEMS (TANZANIA)**

For the Livestock Production Research Institute, Mpwapwa, to develop improved pasture management, livestock feeding, herd composition, and husbandry practices that are acceptable to traditional farmers in central Tanzania. \$317 700 — 36 months.

**84-0081 BANANA PROCESSING (HONDURAS)**

For the Instituto Centroamericano de Investigación y Tecnología Industrial, Guatemala City, to determine the feasibility of establishing a rural banana-processing plant at a banana cooperative in Honduras. \$97 100 — 12 months.

**84-0088 ROOT SYMBIOSIS (SIERRA LEONE)**

For the University of Sierra Leone, Freetown, to enable the Department of Agronomy, Njala University College, to identify fast-growing woody legumes with the most efficient capacity to recycle nitrogen or phosphorus, or both, for incorporation into Sierra Leone's agroforestry systems. \$43 400 — 36 months.

**84-0091 ENABLING FUND (SACCAR)**

For the Ministry of Agriculture, Gaborone, Botswana, to obtain the services of an interim director to coordinate — in consultation with the Southern Africa Development Coordinating Committee — the establishment of the Southern Africa Centre for Cooperation in Agricultural Research (SACCAR). \$124 100 — 8 months.

**84-0105 BY-PRODUCTS (CAMEROON)\***

For the Ministry of Higher Education and Scientific Research, Cameroon, to enable its Institute of Animal Research to study small-ruminant production systems in Cameroon's North West Province and identify sheep- and goat-feeding systems appropriate for small-scale farmers. \$124 900 — 36 months.

**84-0112 PROCESS IMPROVEMENT (PHILIPPINES)**

For the National Institute of Science and Technology, Manila, to enable its Food Technology Research Program to improve the operations, productivity, and profitability of small-scale factories for fermented fish sauce in the Philippines. \$119 100 — 36 months.

**84-0113 COFFEE BERRY BORER (CIBC-MEXICO)**

For the Commonwealth Institute of Biological Control (CIBC), Curepe, Trinidad and Tobago, to develop biological control methods to reduce damage caused by the coffee berry borer in Mexico. \$329 500 — 36 months.

**84-0114 FARMING SYSTEMS AND PHOSPHATE ROCK (IFDC-CIAT) — PHASE II**

For the International Fertilizer Development Center (IFDC), Muscle Shoals, USA, in conjunction with the Centro Internacional de Agricultura Tropical (CIAT), Cali, Colombia, to develop an inexpensive and effective source of phosphate fertilizer using indigenous phosphate rock and relevant management techniques for small farmers in the mid- and high-altitude tropics of the Andean region. \$755 000 — 36 months.

**84-0115 PROCESS IMPROVEMENT (MALAYSIA)**

For the Institut Penyelidikan dan Kemajuan Perusahaan Malaysia Berhad, Kuala Lumpur, to improve operations — and hence the productivity, profitability, and product quality — of Malaysia's small-scale keropok (fish cracker) factories. \$141 800 — 36 months.

**84-0119 INDIGENOUS TREES (MALI)**

For the Ministry of Rural Development, Mali, to enable its Institut National de la recherche

zootechnique forestière et hydrobiologique to develop indigenous forest species for use within the national reforestation programs. \$118 950 — 36 months.

**84-0120 BY-PRODUCTS (NIGERIA)**

For the University of Ife, Ife, to enable the Department of Animal Science of the Faculty of Agriculture to develop and test on-farm feed packages based on cocoa pods and cassava root peels. \$125 600 — 36 months.

**84-0121 GOAT PRODUCTION SYSTEMS (SWAZILAND)**

For the University of Swaziland, Kwaluseni, to study traditional goat production systems to identify social and technical constraints and develop appropriate improved management packages. \$15 500 — 18 months.

**84-0122 COFFEE PROCESSING (GUATEMALA)**

For the Instituto Centroamericano de Investigación y Tecnología Industrial, Guatemala City, in conjunction with the Federación de Cooperativas Agrícolas de Productores de Café de Guatemala to develop improved coffee-processing technology for small coffee-grower cooperatives. \$174 340 — 36 months.

**84-0127 CROPPING SYSTEMS (HONDURAS) — PHASE III**

For the Centro Agronómico Tropical de Investigación y Enseñanza, Turrialba, Costa Rica, to enable the Secretaría de Recursos Naturales, Honduras, to increase the crop yields and incomes of small farmers by reducing the production constraints on important cropping systems. \$442 500 — 36 months.

**84-0129 MILK PRODUCTION SYSTEMS (CHILE)**

For the Universidad Católica de Chile, Santiago, to enable its Faculty of Agriculture to develop milk-beef production systems that contribute to the improvement of the socioeconomic status of small farmers in La Unión and similar areas. \$374 500 — 36 months.

**84-0130 DAIRY-BEEF PRODUCTION SYSTEMS (GUATEMALA)**

For the Instituto Interamericano de Cooperación para la Agricultura, San José, Costa Rica, to enable the Instituto de Ciencia y Tecnología Agrícola and the Universidad de San Carlos de Guatemala, Guatemala City, to improve small-farm dairy-beef production systems in two regions of Guatemala. \$380 000 — 36 months.

**84-0132 ROOT SYMBIOSIS (ZAIRE)**

For the University of Kinshasa, to enable its Department of Biology to assess the practicability of using mycorrhizal inoculation to increase the productivity of food crops and ligneous plants, and to adapt the inoculation methods to field conditions. \$170 460 — 36 months.

**84-0133 MULTIPURPOSE TREES (ETHIOPIA)**

For the Forestry and Wildlife Conservation Development Authority, Addis Ababa, to enable its Forest

Research Department to identify suitable multipurpose tree and shrub species for integration into agropastoral production systems in the highlands of Ethiopia. \$309 480 — 36 months.

**84-0134 FINFISH NUTRITION (SRI LANKA)**

For the University of Ruhuna, Matara, to enable its Department of Zoology to determine the nutritional requirements of tilapia (*Sarotherodon niloticus*) under intensive cultivation in Sri Lanka, and evaluate locally available feeds as alternatives to the increasingly expensive and scarce fish-meal. \$210 820 — 36 months.

**84-0136 GROUNDNUTS (MALAWI) — PHASE II**

To enable the International Crops Research Institute for the Semi-Arid Tropics, Hyderabad, India, to consolidate the development of a regional groundnut program for Southern Africa and to strengthen national groundnut programs by facilitating cooperation within the region. \$752 400 — 24 months.

**84-0137 OILSEEDS (SUDAN) — PHASE II**

For the Ministry of Agriculture, Food and Natural Resources, Wad Medani, to enable the Agriculture Research Corporation to develop improved varieties and agronomic techniques for the major oilseed crops of the Sudan that will permit increased and more stable yields. \$309 740 — 36 months.

**84-0139 TECHNOLOGY TRANSFER EVALUATION (PHILIPPINES)**

For the Ministry of Agriculture, Quezon City, to enable its Agricultural Research Office to evaluate, in terms of increased farm profits, the efficiency and effectiveness of the Provincial Technology Verification Team method of delivering technology to farmers. \$129 300 — 48 months.

**84-0149 IMPROVED CROPS FOR SMALL FARMERS (CHILE)**

To enable the Universidad Austral de Chile, Valdivia, to develop improved varieties and production techniques for potatoes and cereals in the San Juan area, thereby raising small-farm incomes. \$307 200 — 36 months.

**84-0152 ON-FARM RESEARCH (KENYA)\***

To enable the International Livestock Centre for Africa, Addis Ababa, Ethiopia, and the Kenyan Ministry of Agriculture, Nairobi and Machakos, to design and test technological improvements to crop- and livestock-production systems in eastern Kenya. \$412 800 — 36 months.

**84-0175 GROUNDNUT INDUSTRY ECONOMICS (PHILIPPINES)**

For the National Food Authority, Quezon City, and Isabela State University, to identify major limitations in the production, harvesting, and postharvest handling of groundnuts in the northern Philippines. \$49 910 — 12 months.

**84-0210 MILK-PRODUCTION SYSTEMS (GUYANA) — PHASE II**

For the Caribbean Agricultural Research and Development Institute, Georgetown, to improve livestock-production systems for small and state farms in Guyana's intermediate savanna and coastal region. \$506 000 — 36 months.

**84-0212 SHELLFISH PRODUCTS (CHILE)**

For the Universidad Austral de Chile, Valdivia, to identify the most beneficial systems for the handling, processing, and marketing of cultivated oysters and mussels for communities on the Isle of Chiloe. \$90 730 — 24 months.

**84-0214 CONCH MANAGEMENT (BELIZE) — PHASE II**

For the Ministry of Health, Housing and Cooperatives, Belmopan, to enable its Fisheries Unit to provide management measures for the preservation and recovery of conch stock and to assess the potential of alternative species for diversifying fisheries production. \$200 000 — 36 months.

**84-0215 MARICULTURE (PANAMA) — PHASE II**

For the Ministry of Rural Development, Panama, to enable its Dirección Nacional de Acuicultura to develop a biologically and economically feasible methodology for the cultivation of Panama's native fish and shrimp in polyculture systems. \$302 300 — 36 months.

**84-0218 CROP-LIVESTOCK SYSTEMS (INDONESIA)**

To enable the Central Research Institute for Food Crops, Bogor, in cooperation with the Central Research Institute for Animal Sciences, to develop methodologies and component technologies for crop-livestock production systems in rainfed uplands to increase small-scale farm productivity and stability in Indonesia's transmigration areas. \$424 000 — 36 months.

**84-0219 SORGHUM AND MILLETS (UGANDA) — PHASE IV**

For the Ministry of Regional Cooperation, Kampala, to strengthen Uganda's research program for the development of better sorghum and finger millet varieties and to improve crop management practices. \$382 500 — 48 months.

**84-0220 FARMING SYSTEMS (MALI) — PHASE III**

For the Institut d'économie rurale of the Ministry of Agriculture, Bamako, to improve food, cash crop, and animal production in southern Mali through rational use of available resources, and to develop a farming-systems research methodology. \$475 500 — 24 months.

**84-0224 BANANA AND PLANTAIN NETWORK (INIBAP)**

For a group of donor agencies to finance the start-up of the International Network for the Improvement of Banana and Plantain (INIBAP), Montpellier, France. \$75 000 — 6 months.

**84-0231 LIVESTOCK PRODUCTION (BURUNDI)\***

For the Ministry of Agriculture and Livestock Production, Bujumbura, to develop improved livestock-production systems for small-scale farms in the Kisozi and Mahwa regions of Burundi, thereby increasing milk and crop production. \$129 300 — 36 months.

**84-0244 FISH PROCESSING (INDONESIA) — PHASE II**

For the Universitas Brawidjaya, Malang, to enable its Department of Food Science and Technology to develop, test, and promote improved procedures for processing and preserving dried, salted fish at the village level. \$193 500 — 36 months.

**84-0260 FABA BEANS PROCESSING (EGYPT)\***

For the University of Alexandria to document consumption and production patterns, nutritive value, and processing of four foods made from faba beans, to identify associated operational and economic constraints, and to make recommendations for research to overcome the constraints. \$46 000 — 9 months.

**84-0269 OYSTER CULTURE (SUDAN) — PHASE II\***

For the Ministry of Agriculture, Food and Natural Resources, Khartoum, to reestablish commercial mother-of-pearl oyster culture along the Red Sea coast and to reduce the impact of mass mortality on cultured pearls. \$310 600 — 36 months.

**84-0270 PISCICULTURE (TOGO) — PHASE II**

For the Ministry of Rural Development, Lomé, to develop cage culture techniques that will increase freshwater fish production in Togo. \$166 500 — 36 months.

**84-0271 LENTIL MECHANIZATION (ICARDA)**

For the International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria, to identify, develop, and test mechanized harvesting systems suitable for small- to medium-sized lentil producers in Syria, Jordan, and Turkey. \$226 900 — 36 months.

**84-0272 RURAL PRODUCTION MODULES (MEXICO)\***

For the Instituto Nacional de Investigaciones Forestales, Mexico City, to develop integrated natural resource management systems to regenerate and increase production of food, fuelwood, fodder, and minor forest products in northern Mexico's arid and semi-arid zones. \$275 600 — 36 months.

**84-0273 RATTAN (CHINA)**

For the Chinese Academy of Forestry, Beijing, to

enable the Research Institute of Tropical Forestry to identify suitable rattan species of good quality and to develop technology for their large-scale cultivation in the southern provinces of China. \$226 600 — 36 months.

**84-0286 CROP INTENSIFICATION (SYRIA) — PHASE III\***

For the Ministry of Agriculture and Agrarian Reform, Damascus, to develop an improved, stable crop rotation for maximum wheat production in the two high-rainfall zones of Syria. \$176 000 — 30 months.

**84-0288 PASTURE IMPROVEMENT (SWAZILAND)\***

For the Ministry of Agriculture and Cooperatives, Mbabane, in cooperation with the University of Swaziland, to improve pasture production by identifying suitable indigenous and introduced pasture species and varieties and to develop techniques for pasture seeding, management, and utilization. \$150 500 — 48 months.

**84-0306 BAMBOO-RATTAN NETWORK (ASIA)\***

For the Agriculture, Food and Nutrition Sciences Division, IDRC, to develop a liaison among, and provide technical guidance to, Centre-supported bamboo and rattan projects in Asia by means of a network coordinator. \$47 000 — 12 months.

**84-0309 ECONOMICS OF ROOT-CROP PROCESSING (PHILIPPINES)**

For the VISCA Foundation for Agricultural and Rural Development, Baybay, to enable the Visayas State College of Agriculture (VISCA) to evaluate and identify ways of improving root-crop processing technologies. \$5100 — 7 months.

**84-0311 RICE MILLING (INDIA)\***

For the National Productivity Council, New Delhi, to provide data that will assist in developing and promoting improvements in the rice-milling industry to better utilize rice bran for edible oil production. \$54 400 — 18 months.

**84-0312 IMPROVED DEHULLING SYSTEMS (BOTSWANA)**

For the Rural Industries Promotions, Gaborone, to enable the Rural Industries Innovation Centre to develop techniques and systems that will improve the performance of small-scale mills in Botswana, and to document technical changes that have occurred. \$13 300 — 24 months.

**84-0315 GRAIN DEHULLING (UGANDA)\***

For the Ministry of Planning and Economic Development, Kampala, to enable the National Research Council to promote rural processing of locally grown cereals by evaluating, manufacturing, and testing the RIIC-PRL (Rural Industries Innovation Centre-Prairie Research Laboratories) dehuller, and by assessing the scope for future dissemination of the dehullers in Uganda. \$81 200 — 24 months.

**84-0316 ECONOMICS OF BEAN PRODUCTION (BRAZIL)**

For the Secretaria de Agricultura e Abastecimento, São Paulo, to identify agroeconomic factors that reduce bean production and to develop a program to increase production in the state of São Paulo. \$74 000 — 18 months.

**84-0321 MINI-DEHULLERS (THE GAMBIA)\***

For the Catholic Relief Services, Banjul, to develop a dehuller suitable for local manufacture and village use. \$91 100 — 30 months.

**84-0342 VEGETABLE MARKETING (THAILAND)**

For Chiang Mai University, to evaluate market opportunities and constraints with regard to fresh and processed vegetables from northern Thailand. \$9800 — 6 months.

**84-0344 MARINE FISH DISEASE (MALAYSIA)\***

For the Universiti Sains Malaysia, Minden, to provide information that will allow Malaysia's Department of Fisheries to identify, prevent, control, and treat diseases of two cage-cultured fish, seabass and grouper. \$64 000 — 24 months.

**84-1006 LEAF SPOT (COSTA RICA-CANADA)**

For the Universidad de Costa Rica, San José, and the University of Alberta, Edmonton, to develop practical methods to control the coffee disease "ojo de gallo" (American leaf spot disease) by studying the chemistry, biology, and ecology of the pathogen, *Mycena citricolor*, and its hosts. \$382 800 — 36 months.

**84-1012 SALMONIDS (CHILE-CANADA)**

For Hatfield Consultants Ltd, Vancouver, in cooperation with the Subsecretariat for Fisheries of the Ministry for Economic Reconstruction and Development, Santiago, to make a final selection of streams in two regions of southern Chile so that a program of self-sustaining populations of salmon can commence. \$96 800 — 14 months.

**84-1019 BEAN UTILIZATION (INCAP-CANADA)**

For the Instituto de Nutrición de Centro América y Panamá (INCAP), Guatemala City, and the Department of Foods and Nutrition of the University of Manitoba, Winnipeg, to develop consumer acceptability criteria for use in research programs aimed at increasing the availability, consumption, and nutritive value of beans through improved small-scale industrial processing. \$467 900 — 24 months.

**84-1020 SOY RHIZOBIA (THAILAND-CANADA)**

For the Asian Vegetable Research and Development Center, Bangkok, and Agriculture Canada, Lethbridge, to collaborate on the application of nitrogen isotope dilution ratio techniques to improve fixation by soybean-rhizobium symbiosis in Asian soils. \$483 000 — 48 months.

**84-1035 FABA BEAN PATHOLOGY (ICARDA-CANADA) — PHASE III**

For the International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria, and the University of Manitoba, Winnipeg, to continue and expand collaboration in faba bean breeding and pathology research. \$648 500 — 36 months.

**84-1042 LENTIL HAPLOIDS (ICARDA-CANADA)\***

For the International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria, and the University of Manitoba, Winnipeg, to develop methods for the production of homozygous lentil lines through production of haploid plants from anther and pollen culture, for use in lentil-breeding programs. \$146 600 — 24 months.

**84-1043 OYSTER SEED (JAMAICA-CANADA)\***

For the University of the West Indies (UWI), Mona, and Dalhousie University, Halifax, to develop methods for the production of seed oysters and the reduction of oyster mortality during the grow-out period, and to strengthen the capability of the UWI's Zoology Department to carry out applied research on oysters and other bivalves of economic importance. \$215 900 — 36 months.

**84-1050 FISH POISONS (THAILAND-CANADA)\***

For the Prince of Songkla University, Haad-Yai, and the University of British Columbia, Vancouver, to discover safe, efficient, and inexpensive piscicides-molluscicides derived from readily available or easily grown plant species in Thailand, for use in aquaculture. \$433 600 — 24 months.

**84-1053 OILSEED ANTHR CULTURE (NETWORK-CANADA)**

For Carleton University, Ottawa, in collaboration with Agriculture Canada, to develop reliable methodologies for anther or ovule culture, or both, for the large-scale production of haploids in sesame, safflower, and niger seed (noug) for use in the IDRC-sponsored network on oilseed improvement in Asia and Africa. \$86 700 — 24 months.

**84-1054 WEEVIL RESISTANCE (CIMMYT-CANADA)**

For the University of Ottawa to enable the Ottawa-Carleton Centre for Graduate Studies and Research in Biology, in collaboration with the International Centre for Wheat and Maize Improvement (CIMMYT), Mexico City, to determine the biological, physical, and chemical nature of resistance to *Sitophilus* in selected indigenous and CIMMYT maize seed varieties. \$96 900 — 18 months.

**84-1055 FABA BEAN POLLINATION (ICARDA-CANADA)**

For the International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria, and the University of Manitoba, Winnipeg, to increase the efficiency of breeding techniques for faba beans by identifying and evaluating methods of pollination control. \$99 000 — 24 months.



**84-1058 ROOT CROP (IVORY COAST-CANADA)**

For the Université d'Abidjan and the Université de Montréal to develop tissue-culture and related biotechnological methods for the improvement, multiplication, screening, selection, and testing of yams for increased production. \$96 200 — 36 months.

## Communications

**83-0336 EDITING AND PUBLICATION PRODUCTION TRAINING (ASIA-CANADA)**

For the International Rice Research Institute, Manila, in cooperation with the University of Toronto Press, to develop and implement an intensive 16-week training course on the editing and production of research and extension publications. \$578 314 — 36 months.

**84-0030 INFORMATION EXCHANGE WITH CHILDREN (KENYA) — PHASE II**

For the Mazingira Institute, Nairobi, to produce an information package entitled "Children, Infant Care, and Population" for *Rainbow* magazine. \$30 138 — 12 months.

**84-0077 GEMINI NEWS SERVICE**

For the NewsConcern International Foundation, London, United Kingdom, to enable the Gemini News Service to expand its coverage of science-related subjects over a 3-year period and concurrently to develop and provide training for developing country journalists writing on science and technology. \$68 215 — 36 months.

**84-0078 TRAINING IN SCIENCE JOURNALISM (MALAYSIA)**

For the Malaysian National News Agency (BERNAMA), Kuala Lumpur, in collaboration with the Malaysian Press Institute, to provide practical training to 16 journalists from national news agencies in South-east Asia in communicating science and technology news through the mass media. \$17 386 — 3 months.

**84-0102 TRAINING OF SCIENCE JOURNALISM TEACHERS (LATIN AMERICA)**

For the Pontificia Universidad Javeriana, Bogotá, Colombia, to provide training in teaching science journalism to a group of teachers from university communications faculties in the Andean countries. \$29 875 — 6 months.

**84-0126 DEVELOPMENT SUPPORT COMMUNICATIONS SUPERVISION AND MANAGEMENT (THAILAND)**

For the Ministry of Agriculture and Cooperatives, Bangkok, to enable the Department of Agricultural Extension, with assistance from Kasetsart University, to organize and conduct a 5-week training course for extension officials in the use of communications media to support agricultural extension. \$62 069 — 9 months.

**84-0171 TRAINING IN SCIENCE JOURNALISM (TANZANIA)**

For the Ministry of Information and Culture, Dar es Salaam, to enable its Information Services Unit to conduct a national training course in science and development writing for 30 Tanzanian print and radio journalists. \$22 364 — 6 months.

**84-0181 SCIENCE AND TECHNOLOGY FEATURES SERVICE (KENYA)**

For the All Africa Press Service, Nairobi, to launch a science and technology feature service. \$12 527 — 12 months.

**84-0191 PROMOTION OF SCIENCE JOURNALISM (ESASWA)\***

For the Eastern and Southern Africa Science Writers Association (ESASWA), Dar es Salaam, Tanzania, to compile, on a quarterly basis, science news and features and distribute them to newspapers, magazines, schools of journalism, broadcasting houses, research institutions, and national scientific councils throughout the region. \$17 756 — 12 months.

**84-0206 BOOK PUBLISHING (VENEZUELA-PERU)**

For the Centro Regional para el Fomento del Libro en América Latina, Bogotá, Colombia, to carry out studies on the book industry and reading habits in Venezuela and Peru. \$10 165 — 12 months.

**84-0262 ARTISANAL FISHERIES VIDEOTAPES (CHILE)**

For the Pontificia Universidad Católica de Chile, Talcahuano, to enable the Departamento de Biología y Tecnología del Mar to produce and evaluate the effectiveness of three instructional video cassettes on subjects that have been identified as local priorities: jack-mackerel fishery, artisanal fishery for the common sardine, and marketing problems in artisanal fisheries. \$12 120 — 9 months.

**84-0265 WORKSHOP ON THE ROLE OF RADIO IN SCIENCE POPULARIZATION (SÉNÉGAL-ZAIRE)**

For the Association interinstitutionnelle pour la communication, Dakar, Sénégal, and the Studio-École de la voix de Zaire to hold a workshop on the popularization of scientific research through radio programs. \$47 460 — 6 months.

**84-0297 SCIENCE POPULARIZATION (NEPAL)**

For the Royal Nepal Academy of Science and Technology, Kathmandu, to plan and implement a pilot science-popularization program that will be conducted in collaboration with the country's press and radio. \$61 830 — 26 months.

**84-0305 SCIENCE WRITING TRAINING (NIGERIA)\***

For the Nigeria Mass Communication Association, Lagos, and the Department of Mass Communications at the University of Lagos to run a science writing training workshop for 20 African journalists. \$40 089 — 6 months.

**84-0334 SCIENCE WRITING TRAINING (PHILIPPINES)**

For the Philippines News Agency, Manila, to conduct a practical 14-day training program for 20 Filipino journalists in interpreting and writing about science and technology issues and research and development activities. \$16 523 — 7 months.

**84-1011 TRAINING IN SCIENCE BROADCASTING (ASIA-CANADA)**

For the Asia Pacific Institute for Broadcasting Development, Kuala Lumpur, Malaysia, and the Canadian Broadcasting Corporation, Ottawa, to collaborate in an intensive 3-week training course for radio professionals. \$64 242 — 6 months.

## Cooperative Programs

**84-1001 COASTAL MANAGEMENT STUDY (JAMAICA-CANADA)**

For the University of the West Indies, Kingston, and Dalhousie University, Halifax, to investigate the impact of development on the Hellshire coast and provide guidelines for conserving this and other Caribbean coastal environments. \$555 469 — 36 months.

**84-1002 DATA PROCESSING (CIMMYT) — PHASE II**

For the Centro Internacional de Mejoramiento de Maíz y Trigo, Mexico City, in cooperation with Agriculture Canada, to develop data base management systems, statistical analysis, and biometrics research, and to provide on-site training and support for a systems application software specialist. \$216 500 — 24 months.

**84-1003 COOPERATIVE MANAGEMENT: A CASE STUDY (TANZANIA-CANADA) — PHASE II**

For the Co-operative College, Moshi, and York University, Toronto, to devise "action plans" for the cooperative movement that combine opportunities for initiatives both at the national level and at the grass roots, and to design and evaluate a prototype model for collaborative action-research that might be useful in other joint North-South research projects. \$475 830 — 28 months.

**84-1007 INDUSTRIAL STEEL ALLOYS (BRAZIL-CANADA)**

For the Fundação Souza Marques, Rio de Janeiro, and the University of Saskatchewan, Saskatoon, to collaborate on a study of the industrially important problem of metal failure under high temperature and pressure. \$94 000 — 24 months.

**84-1008 KARST DETECTION (MALAYSIA-CANADA)**

For the Universiti Malaya, Kuala Lumpur, and the Geological Survey of Canada, Ottawa, to develop methods to study and map irregular subsurface topographic features for engineering and mining applications. \$95 800 — 12 months.

**84-1010 INTERNATIONAL DEVELOPMENT OFFICE (CANADA)**

For the Association of Universities and Colleges of Canada, Ottawa, to enable its International Development Office to pursue its mandate concerning the extension of the role of Canadian universities in the field of international development. \$63 000 — 12 months.

**84-1014 PASSENGER TRANSPORTATION (SRI LANKA-CANADA)**

For the University of Moratuwa and the University of Calgary to develop and validate a model for estimating future intercity travel by the various transport modes in Sri Lanka. \$242 900 — 36 months.

**84-1016 AIR POLLUTION (JORDAN-CANADA)**

For the Royal Scientific Society, Amman, and Environment Canada, Ottawa, to establish national air quality and emission standards in Jordan by developing, testing, and evaluating a cost-effective air-pollution monitoring system suitable for a developing country's conditions. \$407 899 — 36 months.

**84-1017 AGROGEOLOGY (TANZANIA-CANADA)**

For Sokoine University of Agriculture, Morogoro, and the University of Guelph to increase the fertility of some types of tropical soils by making use of locally available geological and organic materials, such as phosphates, carbonates, and igneous rock. \$455 636 — 36 months.

**84-1026 CAIRO METRO (EGYPT-CANADA)**

For Ain Shams University, Cairo, and the University of Alberta, Edmonton, to train Egyptian researchers in the use of instrumentation for field measurement of ground motion in excavations and to produce a model of soil-structure interaction during the excavation of the Cairo metro underground line. \$94 640 — 12 months.

**84-1027 WEATHER RADAR (CHINA-CANADA)**

For the Lanzhou Institute, China, and McGill University, Montreal, to carry out atmospheric studies in the Gansu Province of China using a weather radar with digital recording and analysis equipment with a view to tracking damaging hailstorms, forecasting flash floods, and helping in the design and operation of irrigation schemes. \$224 090 — 36 months.

**84-1028 TRANSPORTATION (CHILE-CANADA)**

For the Pontificia Universidad Católica de Chile, Santiago, and the Université de Montréal to adapt and develop models and methodology for the analysis and planning of urban transportation networks in Chile to provide the information to planners and policymakers in a usable form. \$349 500 — 36 months.

**84-1030 FLY-ASH CONCRETE (ARGENTINA-CANADA)**

For the Laboratorio de Entrenamiento Multidisciplinario para la Investigación Tecnológica, La Plata, and

the Canada Centre for Mineral and Energy Technology, Ottawa, to develop comprehensive performance data on fly-ash utilization in routine concrete construction in Argentina and other Latin American countries. \$226 905 — 36 months.

**84-1031 UPGRADING TURKISH LIGNITE (TURKEY-CANADA)\***

For the University of Cukurova, Adana, and the Université de Sherbrooke to study the economic feasibility of upgrading the coking quality of low rank coals by using readily available blast-furnace gases in combination with steam in a closed and pressurized system. \$346 463 — 36 months.

**84-1032 ACTIVATED CARBON (COLOMBIA-CANADA)\***

For the Universidad Nacional de Colombia, Medellin, and the Royal Military College, Kingston, to study the technical and economic feasibility of obtaining activated carbon at reasonable prices and with appropriate technology. \$209 200 — 36 months.

**84-1034 FOUNDRY TECHNOLOGY (ARGENTINA-CANADA)\***

For the Laboratorio de Entrenamiento Multidisciplinario para la Investigación Tecnológica, La Plata, and the University of British Columbia, Vancouver, to develop suitable methods for the production of compact graphite cast iron in Argentina and eventually the rest of Latin America using current cupola furnace technology. \$232 250 — 36 months.

**84-1037 GAS INSULATION SYSTEMS (CHINA-CANADA)\***

For Xi'an Jiaotong University, Xi'an, and the University of Manitoba, Winnipeg, to develop a research and development capability at the former in the area of compressed-gas insulation systems. \$232 271 — 36 months.

**84-1038 MULTIPURPOSE FURNITURE (HONG KONG-CANADA)**

For the Hong Kong Polytechnic, Kowloon, and the Ontario College of Art, Toronto, to create new multipurpose furniture designs to promote the safe utilization of the extremely limited interior space inside government housing in Hong Kong. \$97 350 — 12 months.

**84-1039 WELDING CONSUMABLES (ARGENTINA-CANADA)\***

For the Universidad Nacional de Mar del Plata and the University of Alberta, Edmonton, to develop flux-cored welding consumables for use by small- and medium-scale metal industries and to improve the efficiency and quality of welding work in Argentinian steels. \$254 500 — 24 months.

**84-1040 MOROCCAN SWELLING CLAYS (MOROCCO-CANADA)\***

For the École Mohammadia d'ingénieurs, Rabat, and the Université de Sherbrooke to determine the specific gravity of the swelling clays, to define their geotechnical characteristics, and to propose suitable methods for predicting their behaviour. \$315 000 — 36 months.

**84-1041 URBAN SOIL ENGINEERING (TUNISIA-CANADA)\***

For the École nationale d'ingénieurs, Sfax, and the Université de Sherbrooke to identify, map, analyze, and interpret the main geotechnical problems of the Sfax urban region to propose viable technical solutions. \$135 500 — 36 months.

**84-1044 URBAN GEOLOGY (THAILAND-CANADA)**

For the Asian Institute of Technology, Bangkok, and McGill University, Montreal, to evaluate the geotechnical properties of quaternary sediments of the Central Plain of Thailand, and to identify and define the main geotechnical problems related to land subsidence there. \$296 800 — 36 months.

**84-1045 FIBRE-REINFORCED ROOFING (ETHIOPIA-CANADA)**

For the University of Addis Ababa and the University of Ottawa to develop comprehensive performance data so that fibre-reinforced concrete can be used in the production of corrugated roofing sheets and other building components in Ethiopia and other developing countries. \$106 800 — 36 months.

**84-1047 HUMAN SETTLEMENT PLANNING AND MANAGEMENT (FLACSO-CANADA)**

For the Facultad Latinoamericana de Ciencias Sociales (FLACSO), Buenos Aires, and York University, Toronto, to collect, analyze, and compare recent attempts in Latin America to make the planning of human settlements more responsive to the needs and circumstances of the populations that it is supposed to serve. \$118 700 — 12 months.

**84-1048 TECHNOLOGY ADOPTION SMEs (MALAYSIA-CANADA)\***

For the Institut Teknologi Mara and the Universiti Pertanian Malaysia, both in Selangor, in cooperation with the University of Saskatchewan and the Saskatchewan Research Council, both in Saskatoon, to study technology acquisition and adoption within small- and medium-sized enterprises (SMEs) in Malaysia. \$129 881 — 12 months.

**84-1051 CANADIAN AREA-SPECIFIC LEARNED SOCIETIES**

For the Canadian Association for Latin American and Caribbean Studies, the Canadian Asian Studies Association, and the Canadian Association for African Studies, all at Carleton University, Ottawa, to meet current operational commitments. \$94 000 — 12 months.

**84-1052 INTERNATIONAL DEVELOPMENT SECRETARIAT (CANADA)**

For the Association of Universities and Colleges of Canada, Ottawa, to enable its International Development Office to continue enlarging the role of Canadian universities in the realm of international development. \$67 000 — 12 months.

**84-1056 QUATERNARY HYDROGEOLOGY (BENIN-CANADA)\***

For the Université nationale du Bénin, Cotonou, and the Université du Québec à Montréal to undertake

research on the geology and hydrogeology of the quaternary coastal basin of Benin. \$98 224 — 12 months.

**84-1057 FIBRE-REINFORCED COMPOSITE MATERIALS (MEXICO-CANADA)\***

For the Universidad Autónoma Metropolitana, Mexico City, and Metallurgical Consulting Services Ltd. Saskatoon, to study the economic and technical feasibility of utilizing fibre-reinforced polymeric composite springs as a replacement for conventional steel leaf springs currently used in the automotive industry. \$86 900 — 30 months.

## Fellowships and Awards

**84-0012 POSTGRADUATE TRAINING COURSE IN PRECAMBRIAN GEOLOGY (ETHIOPIA-CANADA)**

For the Geology Department of the University of Addis Ababa and the Ottawa-Carleton Centre for Geoscience Studies of Carleton University, Ottawa, to collaborate in the preparation and presentation of a training course on Precambrian geology. \$96 450 — 6 months.

**84-0035 TRAINING COURSE: AGRO-INDUSTRY MANAGEMENT (PHILIPPINES)**

For the Development Academy of the Philippines, Tagaytay, Manila, to enable the Productivity and Development Center to present a training course for managers of food-processing industries from countries in Asia and the Pacific. \$46 500 — 8 months.

**84-0036 TRAINING COURSE ON SPECIALIZED INFORMATION CENTRES FOR INFORMATION ANALYSIS AND CONSOLIDATION (ASIA)**

For the Asian Institute of Technology, Bangkok, Thailand, to prepare and present a training course for managers of specialized information centres in Asia to provide them with the knowledge and techniques to establish, operate, and manage such centres. \$64 380 — 3 months.

**84-0037 TRAINING COURSE: FOREST RESEARCH MANAGEMENT (SINGAPORE)**

For the National University of Singapore to provide training in the management of research and development in forestry and build an institutional capacity within the region to provide such training on a continuing basis. \$93 000 — 7 months.

**84-0051 DEGREE TRAINING: RICE FARMING SYSTEMS (BHUTAN)**

For the International Rice Research Institute (IRRI), Los Baños, Philippines, to provide support for staff members of the Department of Agriculture of Bhutan to study at IRRI for bachelor's and master's of science degrees. \$172 880 — 36 months.

**84-0092 TRAINING WORKSHOP: QUALITATIVE RESEARCH IN EDUCATION (CHILE)**

For the Programa Interdisciplinario de Investigaciones en Educación de la Academia de Humanismo Cristiano, Santiago, to train researchers associated with

the network on qualitative research in education in the techniques needed to explore the problems of school culture, education, and change. \$49 300 — 16 months.

**84-0103 TRAINING WORKSHOP: QUANTITATIVE RESEARCH IN EDUCATION (LATIN AMERICA)**

For IDRC's Fellowships and Awards Division to train junior researchers associated with IDRC-supported education research institutions and ministry of education personnel in Peru, Mexico, and Colombia in the techniques of quantitative research and program evaluation. \$23 960 — 12 months.

**84-0104 TRAINING COURSE: ANIMAL PRODUCTION SYSTEMS (CATIE)**

For the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE), Turrialba, Costa Rica, to provide a practical training course on animal production systems to 10 participants in the Latin American network of animal production systems projects supported by IDRC. \$31 460 — 6 months.

**84-0138 TRAINING SEMINAR ON QUALITATIVE RESEARCH METHODS IN EDUCATION (EASTERN-SOUTHERN AFRICA)**

For Kenyatta University College, Nairobi, Kenya, to offer training in qualitative research methods to early- or mid-career professionals involved in research, teaching, policy-making, or curriculum development at institutions in eastern and southern Africa. \$41 320 — 6 months.

**84-0144 RESEARCH AND TRAINING PROGRAM AT THE CAIRO DEMOGRAPHIC CENTRE (EGYPT) — PHASE II**

For the Cairo Demographic Centre to provide fellowship funds for 10 African, Middle Eastern, and Asian students enrolled in degree programs at the Centre. \$131 000 — 12 months.

**84-0163 TRAINING SUPPORT FOR AGROFORESTRY RESEARCH (AFRICA)**

For the International Council for Research in Agroforestry, Nairobi, Kenya, to strengthen the capability of scientists and development planners from national agricultural and forestry institutions in the region to initiate and implement agroforestry research and development activities. \$144 000 — 24 months.

**84-0180 TRAINING WORKSHOP: HEALTH SCIENCE APPLIED RESEARCH METHODS (ZIMBABWE)**

For the Ministry of Health, Harare, to enable its Blair Research Laboratory to familiarize young researchers, potential researchers, and policy advisers with the basic skills and importance of applied research methods in the health sciences. \$91 000 — 6 months.

**84-0203 TRAINING RESEARCH INFORMATION MANAGEMENT (KENYA)**

For the Mazingira Institute, Nairobi, to develop the capacity to design, install, and operate a micro-



computer system for research information management. \$9680 — 12 months.

**84-0225 TRAINING IN AQUACULTURE (SEAFDEC)**

For the Aquaculture Department of the Southeast Asian Fisheries Development Center (SEAFDEC), Manila, to increase the number of researchers and technicians in the aquaculture industry in Southeast Asia by offering short-term training courses on the subject. \$268 260 — 24 months

**84-0230 STAFF DEVELOPMENT: ROOT CROP RESEARCH AND TRAINING (PHILIPPINES)**

For the Visayas State College of Agriculture, Baybay, to upgrade members of the Philippine Root Crop Research and Training Center's research staff possessing bachelor's degrees through master's and nondegree programs. \$72 000 — 48 months.

**84-0235 INTERNATIONAL FOUNDATION FOR SCIENCE**

For the International Foundation for Science, Stockholm, Sweden, to provide small research grants to 40 young scientists from developing countries involved in research work in their own countries. \$350 000 — 12 months.

**84-0240 RESEARCH FELLOWSHIP: WAI-ON PHOON (SINGAPORE)**

For IDRC's Fellowships and Awards Division to provide a research fellowship to Dr Wai-On Phoon, Singapore, to enable him to work and study at McMaster University, Hamilton, in the Department of Occupational Health. \$19 580 — 3 months.

**84-0241 RESEARCH FELLOWSHIP: EPIRITU (PHILIPPINES)\***

For IDRC's Fellowships and Awards Division to provide a research fellowship to Dr A.C. Espiritu, Manila, Philippines, to enable him to work at the Human Rights Research and Education Centre at the University of Ottawa on a research proposal entitled "The International Bill of Human Rights and the Emerging Right to Development: A Comparative Study of Developmental Dynamics and Human Rights Practices in the First and Third Worlds." \$76 900 — 12 months.

**84-0243 POSTGRADUATE RESEARCH TRAINING PROGRAM AT THE UNIVERSITY OF THE SOUTH PACIFIC**

For the University of the South Pacific, Suva, Fiji, to provide 12 postgraduate scholarships for students wishing to undertake advanced studies in the areas of food, agriculture, and nutrition sciences. \$266 600 — 36 months.

**84-0255 POSTGRADUATE HYDROLOGIC EDUCATION AND RESEARCH (INDIA)**

For the University of Roorkee, India, to train a total of 12 engineers and scientists from developing countries in hydrology. \$64 100 — 40 months.

**84-0308 RESEARCH FELLOWSHIP: THOMAS (GUYANA)**

For IDRC's Fellowships and Awards Division to

provide a research fellowship to Dr Clive Thomas, Georgetown, Guyana, to enable him to work and study at the Centre for Research on Latin America and the Caribbean at York University, Toronto. \$28 450 — 6 months.

**84-1023 YOUNG CANADIAN RESEARCHERS (CANADA)**

For IDRC's Fellowships and Awards Division to facilitate the involvement of young Canadians in research on Third World issues by giving them an opportunity to acquire research experience in Third World institutions. \$450 000 — 12 months.

## Health Sciences

**83-0307 LIVER FLUKE INFECTIONS (THAILAND)**

For Mahidol University, Bangkok, to enable its Faculty of Tropical Medicine to determine the prevalence of *Opisthorchis* infection in areas of northeastern Thailand and to develop an appropriate program for preventing it. \$173 330 — 24 months.

**83-0311 SMALL-SCALE DESALINATORS (BOTSWANA)**

For the Rural Industries Promotions, Gaborone, to enable the Rural Industries Innovation Centre, Kanye, to conduct technical and socioeconomic research on the suitability of prototype small-scale desalinators for groups of "remote area dwellers" living in the Kalahari Desert. \$213 400 — 36 months.

**84-0001 RUBELLA (INDONESIA)**

For Universitas Indonesia, Jakarta, to determine whether rubella constitutes a sufficiently great health hazard to Indonesian newborns to warrant a national immunization program. \$53 910 — 17 months.

**84-0002 PERINATAL MORTALITY (MEXICO)**

For the Universidad Nacional Autónoma de México to enable the Centro de Investigaciones en Salud Pública to investigate the effects of variations in the quality of perinatal care on perinatal mortality. \$99 500 — 12 months.

**84-0003 HIGH RISK PREGNANCY (INDONESIA)**

For Yayasan Atma Jaya, Jakarta, to develop and evaluate a strategy for the detection and follow-up of high-risk pregnancies in a slum area of northwest Jakarta. \$66 510 — 19 months.

**84-0004 PERINATAL MORTALITY (BRAZIL)**

For the Fundação Norte-Riograndense de Pesquisa e Cultura, Natal, to enable the Department of Obstetrics and Gynecology of the Universidade Federal do Rio Grande do Norte to develop a new, economical, and widely applicable epidemiologic approach for the evaluation of high-risk pregnancies. \$156 080 — 20 months.

**84-0013 SOLAR DISINFECTION (THAILAND)**

For Chiang Mai University to study the efficacy of

solar irradiation as a low-cost means of disinfecting drinking water. \$65 885 — 18 months.

**84-0022 RAINWATER CATCHMENT (MALAYSIA)**

For the Universiti Kebangsaan Malaysia, Selangor, to review current knowledge, attitudes, and practices concerning rainwater catchment systems with the aim of improving and popularizing such systems. \$27 500 — 18 months.

**84-0029 ALCOHOLISM (BOTSWANA)**

For the University of Botswana and Swaziland, Gaborone, to evaluate the dimension of the problems related to alcohol use in Botswana. \$213 930 — 24 months.

**84-0032 SYPHILIS IN PREGNANCY (THAILAND)**

For Chulalongkorn University, Bangkok, to institute a comprehensive screening and treatment program for syphilis in patients attending the antenatal clinic at the University. \$79 417 — 24 months.

**84-0033 EPIDEMIOLOGY OF DENGUE (MALAYSIA)**

For the Universiti Malaya, Kuala Lumpur, to enable its Department of Microbiology to carry out basic epidemiological and serological studies to monitor the activity of dengue virus in regions where it is endemic and to determine risk factors contributing to the development of dengue hemorrhagic fever. \$143 675 — 36 months.

**84-0042 SCHOOL SANITATION (LESOTHO)**

For the Central Planning and Development Office, Maseru, to develop, implement, and evaluate a health education program designed to change knowledge, attitudes, and practices with respect to the construction, use, and maintenance of sanitary facilities. \$217 000 — 36 months.

**84-0052 CERVICAL DYSPLASIA (KENYA)**

For the Kenya Medical Research Institute, Nairobi, to determine the health status of Kenyan rural women as it relates to cervical dysplasia and other genital infections. \$47 090 — 12 months.

**84-0054 BCG VACCINATION (KENYA)**

For the Kenya Medical Research Institute, Nairobi, to enable the Kenya Tuberculosis Investigation Centre to evaluate the effectiveness of BCG vaccination in children aged 4 years and under, and to determine the prevalence and characteristics of tuberculosis in children aged 4 years and under who are contacts of new cases of smear-positive pulmonary tuberculosis. \$93 630 — 36 months.

**84-0059 FORTIFYING MONOSODIUM GLUTAMATE WITH VITAMIN A (INDONESIA)**

For Helen Keller International, New York, USA, to assess the potential of using monosodium glutamate as a delivery system for vitamin A to high-risk children to prevent the development of nutritional blindness. \$96 240 — 19 months.

**84-0060 GASTROENTERITIS (CHILE) — PHASE II**

For the Instituto de Nutrición y Tecnología de los Alimentos, Universidad de Chile, Santiago, to assess the impact of relocation on slum-dwelling families with respect to the epidemiology of acute diarrhea and to nutritional status. \$191 260 — 24 months.

**84-0061 CHIANG MAI LACTATION STUDY (THAILAND)**

For Chiang Mai University to enable its Research Institute for Health Sciences to field test the latex nipple shield and to elucidate the relationship between milk volume and content and infant growth and development/faltering and other variables such as food supplementation. \$204 695 — 36 months.

**84-0072 CHILDHOOD DIARRHEA (KENYA)**

For the Kenya Medical Research Institute, Nairobi, to investigate the feasibility and effectiveness of several different management strategies that could be used in Kenya's National Diarrhea Control Program. \$307 280 — 30 months.

**84-0074 NUTRITIONAL RISK FACTORS (PHILIPPINES)**

For the University of the Philippines, Los Baños, to enable its College of Human Ecology to determine the contribution of various degrees of malnutrition to morbidity and mortality in children aged 12–60 months. \$110 880 — 36 months.

**84-0079 VACCINE TRIAL CENTRE (THAILAND)**

For Mahidol University, Bangkok, to support the establishment of a vaccine trial centre in Thailand that would become a regional centre for training and research. \$191 435 — 12 months.

**84-0080 WATER POLLUTION (TUNISIA)**

For the Ministry of Public Health, Tunis, to enable the Directorate of Environmental Health and Pollution to study the nature and the level of pollution in the Medjerda River. \$59 840 — 18 months.

**84-0099 ROTAVIRUS IN NEWBORNS (CHILE)**

For the Instituto de Nutrición y Tecnología de los Alimentos, Universidad de Chile, Santiago, to characterize and evaluate the clinical significance of the fecal excretion of rotavirus during the newborn period and the effect of the delivery method as a mechanism of infection. \$81 840 — 15 months.

**84-0111 MACROINVERTEBRATE SURVEY (KOREA)**

For the Yonsei University College of Medicine, Seoul, to enable its Institute of Tropical Medicine to establish a methodology for assessing water quality using macroinvertebrates (arthropods and mollusks). \$68 375 — 24 months.

**84-0116 RURAL ABORTION (NEPAL)**

For the Integrated Development Systems, Kathmandu, to examine the incidence of abortion and associated mortality and morbidity in rural areas of Nepal, providing information for the review of current abortion legislation. \$69 400 — 12 months.

**84-0135 TRADITIONAL AND PROFESSIONAL HEALERS (PHILIPPINES)**

For the Central Philippine University, Iloilo City, to compare the health beliefs and practices of traditional and professional healers in the province of Iloilo. \$35 300 — 12 months.

**84-0140 IRON SUPPLEMENTATION-DIARRHEAL DISEASE (CHILE)**

For the Instituto de Nutrición y Tecnología de los Alimentos, Universidad de Chile, Santiago, to evaluate the relationship between fortification of milk formula with iron and the incidence of diarrheal disease in nonanemic children under 2 years of age. \$271 060 — 18 months.

**84-0141 PATHWEIGH INFANT SCALE (GLOBAL)**

For the Program for Appropriate Technology in Health, Seattle, USA, to complete the development of electronic weighing technology for determining birth weight and screening for nutritional status in developing countries, and to make these instruments widely available. \$45 675 — 6 months.

**84-0148 EVALUATION OF COMMUNITY HEALTH PRACTITIONERS (KOREA)**

For Yonsei University, Seoul, to enable its College of Nursing to evaluate the actual function and role of the Community Health Practitioner to improve the delivery of primary health care in rural Korea. \$99 470 — 20 months.

**84-0154 SYPHILIS (ZAMBIA) — PHASE II**

For the Ministry of Health, Lusaka, and the University Teaching Hospital of Zambia to design and implement a program for antenatal screening and health education, and to assess its effectiveness in reducing the incidence of syphilis in pregnancy. \$242 100 — 24 months.

**84-0155 TYPHOID (CHILE)**

For the Instituto de Nutrición y Tecnología de los Alimentos, Universidad de Chile, Santiago, to elucidate the sociocultural factors influencing the incidence of typhoid in children. \$105 010 — 30 months.

**84-0159 SCHISTOSOMIASIS CONTROL: A COMMUNITY-BASED APPROACH (ZIMBABWE)**

For the Ministry of Health, Harare, to enable the Blair Research Laboratory to design, implement, and evaluate an integrated community-based schistosomiasis control program as a component of the existing primary health-care system. \$470 740 — 36 months.

**84-0174 WEANING METHODS (MALI)**

For the Institut national de recherche en santé publique, Bamako, to take an inventory of the weaning methods used in three rural communities in Mali. \$77 680 — 12 months.

**84-0177 DOCK HANDLING ACCIDENTS (KENYA)**

For the Ministry of Labour, Nairobi, to enable its Factories Inspectorate to identify ways of reducing

injuries and ensuring safer working conditions in Kilindini (Mombasa Port). \$44 930 — 24 months.

**84-0178 WORKERS' EXPOSURE TO SOLVENTS (KENYA)**

For the Ministry of Labour, Nairobi, to enable its Factories Inspectorate to provide the authorities and the general public with accurate data on the extent of worker exposure to solvents in the printing, publishing, and paint-manufacturing industries, so that policies can be formulated to protect workers. \$93 200 — 24 months.

**84-0185 LIVESTOCK WASTES (KOREA)**

For the National Environmental Protection Institute, Seoul, to determine the impact of cattle- and pig-farming operations on water resources. \$94 900 — 18 months.

**84-0187 SANITARY CONDITIONS (NEPAL)\***

For the Ministry of Health, Kathmandu, to collect and analyze baseline data on prevailing sanitary conditions and practices in Kathmandu City. \$46 100 — 24 months.

**84-0200 FEEDING PRACTICES-INFANT MORTALITY (BRAZIL)**

For the Universidade Federal de Pelotas to investigate the role of different feeding patterns in infant deaths due to diarrhea and other childhood diseases. \$98 160 — 24 months.

**84-0208 THEYTHANCOTTAI WATER TREATMENT (INDIA)\***

For the Christian Medical College and Hospital, Tamil Nadu, to enable the Rural Unit for Health and Social Affairs to determine the use and effectiveness of theythancottai seeds as a water-treatment agent. \$5205 — 12 months.

**84-0216 SEXUALLY TRANSMITTED DISEASES (CUBA)**

For the Ministry of Public Health, Havana, to determine the prevalence and incidence of sexually transmitted diseases, especially gonorrhea, with a view to establishing a national control program. \$182 560 — 24 months.

**84-0226 XEROPHTHALMIA-BLINDNESS (ZAMBIA)**

For the National Food and Nutrition Commission, Lusaka, to determine the prevalence and major causes of blindness in the Luapula Valley. \$241 990 — 24 months.

**84-0227 PRIMARY HEALTH CARE IN TRIBAL COMMUNITIES (PHILIPPINES)**

For De La Salle University, Manila, to enable its Integrated Research Center to determine the feasibility and effectiveness of community involvement in the provision of preventive, promotive, and curative health services. \$150 460 — 30 months.

**84-0228 DIARRHEA-HEALTH EDUCATION (PHILIPPINES)**

For the Research Institute for Tropical Medicine, Manila, to develop an effective, primary health-care, educational intervention program designed to

prevent diarrheal disease and promote maternal and child health. \$174 775 — 36 months.

**84-0242 EPIDEMIOLOGY OF ACUTE DIARRHEA (COLOMBIA)**

For the Hospital Infantil Universitario Lorencita Villegas de Santos, Bogotá, to investigate the association between diarrheal disease and malnutrition, and whether such an association may be mediated by abnormalities in the immune system. \$70 470 — 16 months.

**84-0245 BLISS WASTE TREATMENT (PHILIPPINES)**

For the National Environmental Protection Council, Quezon City, to develop and test a low-cost, easily maintained, and locally acceptable wastewater treatment facility for the BLISS (Bagong Lipunan Sites and Services) housing program. \$62 940 — 24 months.

**84-0247 SEROIMMUNITY TO POLIO AND DPT (JAMAICA)\***

For the Ministry of Health, Kingston, to evaluate the seroimmune status of Jamaican children with regard to polio and DPT (diphtheria, pertussis, and tetanus). \$77 770 — 15 months.

**84-0254 SANITATION SYSTEMS (BANGLADESH)\***

For the Clean Village Research Centre, Dhaka, to design, implement, and evaluate a community-based environmental sanitation promotion program in a small village in Bangladesh. \$53 310 — 24 months.

**84-0266 CONTRACEPTIVE DEVELOPMENT (ICCR, GLOBAL) — PHASE V**

For the Population Council, New York, USA, to enable the International Committee for Contraception Research (ICCR) to continue its contraceptive development programs in 1985 and to give it time to seek new donors. \$400 000 — 12 months.

**84-0274 HANDPUMP MANUFACTURE (INDONESIA)\***

For the Yayasan Dian-Desa, Yogyakarta, to investigate the appropriateness and acceptability of the IDRC-UM (Universiti Malaya) PVC (polyvinyl chloride) handpump in Indonesia. \$72 800 — 18 months.

**84-0278 RURAL PSYCHIATRY (INDIA)\***

For Tribhuvandas Foundation, Anand, to enable the Foundation and two other participating agencies to assess and improve the management of serious mental illnesses by traditional healers and health practitioners in the Kaira district of India. \$62 630 — 24 months.

**84-0279 PARAQUAT INTOXICATION (COLOMBIA)\***

For the Instituto Nacional de Salud, Bogotá, to assess the frequency and severity of the pathologies associated with the unrestricted use of the herbicide Paraquat in the rural municipality of Carmen de Viboral, Colombia. \$247 090 — 16 months.

**84-0280 DIARRHEAL DISEASES CONTROL PROGRAM (GLOBAL) — PHASE III**

For the World Health Organization, Geneva, Switzerland, to enable its Diarrhoeal Diseases Control Programme to reduce the morbidity and mortality caused by acute diarrheal diseases in infants and young children by promoting the self-reliance of individual countries in the control of these diseases. \$300 000 — 24 months.

**84-0283 RURAL SANITATION RESEARCH (SIERRA LEONE) — PHASE II\***

For the Community Development Council, Bo, to replicate the strategies employed in Phase I for promoting self-help in the planning, construction, and maintenance of water supply and sanitation facilities, and to evaluate the impact of these interventions on the health status of the recipient population. \$386 000 — 36 months.

**84-0292 ANOPHELES IDENTIFICATION (ZIMBABWE)**

For the Ministry of Health, Harare, to enable the Blair Research Laboratory to develop a more sensitive method of identifying the vectors involved in malaria transmission in Zimbabwe, thereby improving the country's malaria control program. \$16 615 — 12 months.

**84-0333 ONCHOCERCIASIS (SIERRA LEONE)\***

For the University of Sierra Leone, Freetown, to enable Njala University College to elucidate the pattern of onchocerciasis in a study area and to investigate characteristics related to the insect vector and the parasite. \$90 185 — 24 months.

**84-0336 DRACUNCULOSIS (TOGO)\***

For the Université du Bénin, Lomé, to study the parasitic disease dracunculosis in terms of its prevalence and effects on the population, with a view to implementing appropriate control measures. \$77 405 — 36 months.

**84-0339 INTESTINAL PARASITOSE (TOGO)\***

For the Ministry of Health, Social Affairs and the Advancement of Women, Lomé, to assess the prevalence of intestinal parasitosis caused by protozoa and helminths, particularly hookworms, and their effect on the health of suburban and rural populations in Togo. \$23 315 — 9 months.

## Information Sciences

**83-0308 PHILIPPINE ROOT CROPS INFORMATION SERVICE (PHILIPPINES)**

For the Visayas State College of Agriculture, Baybay, to enable the Philippine Root Crops Research and Training Center to establish a specialized information analysis centre on root crops to serve national scientists and extension workers. \$238 730 — 36 months.

**83-0320 INFORMATION SERVICE ON WHEAT AND OTHER SMALL GRAINS**

For the Centro Internacional de Mejoramiento de Maíz



y Trigo, Mexico City, to provide an information service to institutions and individuals in developing countries relating to research on wheat and other small grains and to the application of scientific knowledge to improve the production of these crops. \$388 655 — 36 months.

**84-0043 MANGROVES AND REMOTE SENSING (INDONESIA)\***

For the Gadjah Mada University, Yogyakarta, to establish a mangrove research unit and methodology for analyzing data recorded by remote sensing and to identify and explain changes in mangrove forests in selected areas. \$168 415 — 30 months.

**84-0053 PAPUA NEW GUINEA INFORMATION NETWORK**

For the University of Papua New Guinea, Port Moresby, to create a data base of New Guinean materials, to deposit microfiche copies of the publications in five strategic locations throughout the country, and to commence automation of the cataloguing operations of the University's library. \$301 740 — 24 months.

**84-0057 NATIONAL HEALTH INFORMATION NETWORK (COLOMBIA)**

For the Federación Panamericana de Asociaciones de Facultades de Medicina, Bogotá, to promote and develop a national health information network for Colombia, within the framework of the regional network coordinated by the Biblioteca Regional de Medicina y Ciencias de la Salud, São Paulo, Brazil. \$200 000 — 24 months.

**84-0063 LATIN AMERICAN TRADE INFORMATION NETWORK CENTRE**

For the International Trade Centre, Switzerland, in collaboration with the Government of the Netherlands, to strengthen the Latin American Trade Information Network (RELIC) by providing support to the three least developed national centres of the network (in Bolivia, Honduras, and Nicaragua). \$337 000 — 24 months.

**84-0067 WATER SUPPLY AND SANITATION RESEARCH INFORMATION SYSTEM (LATIN AMERICA)**

For the Pan American Health Organization, Washington, DC, USA, to enable the Centro Panamericana de Ingeniería Sanitaria y Ciencias del Ambiente, Lima, Peru, to develop a survey methodology for evaluating the present situation and trends of water supply and sanitation research in Latin America, to demonstrate its application in promoting national research policies and programs in selected countries, and to establish a regional research information system. \$140 000 — 21 months.

**84-0073 LATIN AMERICAN HEALTH INFORMATION NETWORK**

For the Pan American Health Organization, Washington, DC, USA, to enable the Biblioteca Regional de Medicina y Ciencias de la Salud, São Paulo, Brazil, to develop a regional-level network devoted to public health and to strengthen its biomedical

information activities within Latin America and the Caribbean. \$392 600 — 24 months.

**84-0097 ARAB REGIONAL RECLAMATION AND SETTLEMENT INFORMATION SERVICE (EGYPT)**

For the International Centre for Rural Development, Alexandria, to establish a regional documentation centre on all aspects of land reclamation and settlement. \$92 880 — 36 months.

**84-0142 CARIBBEAN TECHNOLOGICAL CONSULTANCY SERVICES NETWORK**

For the Caribbean Development Bank, Bridgetown, Barbados, to increase the capacity of Caribbean countries to meet their technological requirements for efficient operation of existing industries and for the development of new productive enterprises. \$621 490 — 36 months.

**84-0146 INDONESIAN FISHERIES INFORMATION SYSTEM**

For the Directorate General of Fisheries of the Ministry of Agriculture, Jakarta, to build up the capability of the Indonesian national fisheries information network so that it can effectively meet the needs of its clientele by gathering, organizing, and disseminating local literature and repackaging foreign literature deemed appropriate for local use. \$173 020 — 36 months.

**84-0147 LIBRARY AND REGIONAL DOCUMENTATION CENTRE (THAILAND)**

For the Asian Institute of Technology, Bangkok, to enable its Library and Regional Documentation Center to enhance its outreach program so that the services and outputs of its two specialized information centres on geotechnical engineering and ferrocement can serve the greatest possible number of users in the region. \$237 950 — 36 months.

**84-0153 NORTHEAST THAILAND: AGRICULTURAL INFORMATION OUTREACH**

For Khon Kaen University, Muang Khon Kaen, to enhance its information services thereby creating suitable conditions for more effective participation and use of the Thai National AGRIS Network. \$45 590 — 24 months.

**84-0158 DEVSIS-TOGO**

For the Ministry of Planning, Industry and Administrative Reform, Lomé, to enable the Technical Documentation Centre to establish and develop a more efficient DEVSIS-type information system and to strengthen national capabilities through the country's participation in the Pan-African Documentation and Information System. \$183 180 — 24 months.

**84-0160 INFOPLAN-BRAZIL — PRELIMINARY PHASE**

For the Instituto de Planejamento Econômico e Social, Rio de Janeiro, to lay the groundwork for the development of a national planning information network that will provide information services to institutions participating in the country's planning process and will become an active participant in

the regional Information System for Planning. \$135 365 — 24 months.

**84-0166 MEDICAL LABORATORY NEWSLETTER (THAILAND)**

For the Chiang Mai University to assist in financing the publication of the bulletin *Medical Laboratory Newsletter*. \$27 965 — 36 months.

**84-0182 DEBT RECORDING AND MANAGEMENT SYSTEM**

For the Commonwealth Secretariat, London, United Kingdom, to enable its Technical Advisory Group to complete the design, programming, and testing of the software comprising the Debt Recording and Management System, which will be of use to developing countries. \$63 000 — 12 months.

**84-0183 THAI NATIONAL AGRIS CENTRE (THAILAND) — PHASE II**

For Kasetsart University, Bangkok, to strengthen the Thai National AGRIS Centre by enabling it to take advantage of the computer facilities of the International Buffalo Information Centre. \$49 195 — 24 months.

**84-0194 DOCPAL MICROFICHE EXCHANGE (CHILE)**

For the Economic Commission for Latin America and the Caribbean, Santiago, to enable its Centro Latinoamericano de Demografía to microfiche documents in its collection and supply them to the Documentation System on Population in Brazil, which is that country's participating centre in the Latin American Population Documentation System (DOCPAL). \$25 435 — 12 months.

**84-0195 DOCPAL (PERU)**

For the Consejo Nacional de Población, Lima, to establish a national population information network for Peru, which will be linked to the Latin American Population Documentation System (DOCPAL) at the Centro Latinoamericano de Demografía, Santiago, Chile. \$80 215 — 24 months.

**84-0196 DOCPAL (MEXICO)**

For the Consejo Nacional de Población, Mexico City, to establish a National Bibliographic Information Centre on Population and Women linked to the Latin American Population Documentation System (DOCPAL). \$51 655 — 18 months.

**84-0197 DOCPAL-BRAZIL NETWORK DEVELOPMENT**

For the Fundação Sistema Estadual de Análise de Dados, São Paulo, to establish a decentralized population information network in Brazil linked to the Latin American Population Documentation System (DOCPAL). \$96 625 — 24 months.

**84-0207 CARIBBEAN INFORMATION NETWORK (CHILE)**

For the Economic Commission for Latin America and the Caribbean, Santiago, to mechanize its data processing and production services and to expand the coverage of the already established and functioning Caribbean Information System to include a

regional sectoral information system on patent information. \$478 520 — 24 months.

**84-0217 CARIBBEAN AGRICULTURAL INFORMATION SYSTEM**

For the University of the West Indies, St Augustine, Trinidad and Tobago, to establish a regional coordinating unit for the Caribbean Agricultural Information System and to establish in each of the English-, Spanish-, and French-speaking countries a national focal point to participate in the network. \$380 655 — 36 months.

**84-0229 MICROCOMPUTER-BASED SYSTEM FOR SMALL AREA DATA RETRIEVAL (CHILE)**

For the Economic Commission for Latin America and the Caribbean, Santiago, and the Centro Latinoamericano de Demografía to enable planning, social service, and other governmental and private agencies to obtain detailed quantitative population census data, in their own countries, rapidly and at low cost, for any small geographical areas of interest. \$141 330 — 16 months.

**84-0232 DOCUMENTATION AND INFORMATION CENTRE ON POSTHARVEST ACTIVITIES (IVORY COAST)**

For the Centre ivoirien de recherches technologiques, Abidjan, to establish a documentation centre to provide specialized information on postharvest activities, so that researchers from the Centre and other institutions can carry out their work more effectively. \$172 975 — 36 months.

**84-0233 AFRICAN NETWORK OF ADMINISTRATIVE INFORMATION: ANAI EXPERIMENTAL**

For the Centre africain de formation et de recherches administratives pour le développement, Tangier, Morocco, to test the feasibility of an African Network of Administrative Information (ANAI) by establishing a pilot project involving about 10 participating national institutions. \$209 500 — 36 months.

**84-0234 REGIONAL INFORMATION SERVICE ON THE BOOK (LATIN AMERICA AND THE CARIBBEAN)**

For the Centro Regional para el Fomento del Libro en América Latina y el Caribe, Bogotá, Colombia, to improve, through automation, the services provided to users of the regional information service on book production and publishing. \$127 200 — 24 months.

**84-0263 COMPUTERIZATION AT PDIN (INDONESIA)**

For Pusat Dokumentasi Ilmiah Nasional (PDIN), Jakarta, to establish an efficient, automated information system that will fully integrate its documentation and library functions. \$94 340 — 24 months.

**84-0268 COCONUT INFORMATION CENTRE (SRI LANKA) — PHASE II**

For the Coconut Research Institute, Lunuwila, to place greater emphasis on the provision of current and synthesized information products and services and

to provide coconut workers with easier access to the current research literature. \$62 460 — 36 months.

**84-0287 UNION CATALOGUE OF CHINESE SCIENTIFIC AND TECHNICAL PERIODICALS**

For the Institute of Scientific and Technical Information of China (ISTIC), Beijing, to prepare a union catalogue of Chinese-language scientific and technical periodicals held within ISTIC and 70 related institutions in China. \$88 200 — 36 months.

**84-0293 REMIN-REMIC: A MANGROVE INFORMATION SYSTEM (ASIA AND THE PACIFIC)**

For the Natural Resources Management Center, Quezon City, Philippines, to activate a Regional Mangrove Information Network (REMIN) and to establish and operate a Regional Mangrove Information Centre (REMIC) for Asia and the Pacific. \$352 900 — 36 months.

**84-0298 WOMEN IN THE CARIBBEAN: DATA RETRIEVAL SYSTEM**

For the University of the West Indies, Cave Hill, Barbados, to enable the Institute of Social and Economic Research to support further research and analysis using the data collected from the Women in the Caribbean Project and to build the Institute's capacity to collect, manipulate, and disseminate the results of future studies. \$183 800 — 24 months.

**84-0304 DEBT RECORDING AND MANAGEMENT SYSTEM (SRI LANKA)**

For the Department of External Resources, Colombo, to enable the Foreign Aid Utilization, Debt Recording and Management Unit to test the CS-DRMS (Commonwealth Secretariat software package) methodologies and software in a real-life situation before making them available to other countries, and to provide Sri Lanka with a centralized record of all foreign aid grants and external liabilities incurred by both its public and private sectors. \$83 300 — 24 months.

**84-0319 CREOLE DISCOURSE AND SOCIAL DEVELOPMENT — A PRELIMINARY STUDY**

For the Economic Commission for Latin America and the Caribbean, Santiago, Chile, to conduct a preliminary study of institutions, public agencies, official policies, and common practices related to the use of the French-based Caribbean Creole language. \$78 800 — 12 months.

**84-0322 REPIDISCA (PERU)\***

For the National Water Supply and Sanitation Service, Lima, to provide information produced nationally and internationally on sanitary engineering and environmental sciences to researchers, planners, decision-makers, and other users. \$59 800 — 36 months.

**84-0323 INTERWATER THESAURUS**

For the International Reference Centre for Community Water Supply and Sanitation, Rijswijk, Netherlands, within the framework of the Programme on Exchange and Transfer of Information, to produce a common multilingual thesaurus in the field of rural

water supply and sanitation. \$92 800 — 12 months.

**84-0324 MEANS OF INFORMATION FOR RURAL DEVELOPMENT (CAMEROON)\***

For the Institut africain pour le développement économique et social, Yaoundé, to improve the conditions and the quality of services offered to young Cameroonians trying to fit into the rural world, by improving and diversifying the ways of disseminating information to development agents. \$95 840 — 24 months.

**84-0346 FAMINE PREDICTION SYSTEM: A CASE STUDY\***

For the London School of Hygiene and Tropical Medicine, United Kingdom, to enable the Food Emergencies Research Unit to develop an inexpensive and effective package of indicators and procedures to be used by governments in developing countries to establish an early warning famine-prediction system. \$34 300 — 12 months.

**84-1009 INTERNATIONAL THESAURUS ON PUBLIC ADMINISTRATION (CANADA)**

For the Encyclopédie d'administration publique, Ste Foy, to produce an international trilingual thesaurus (English, French, and Spanish) in public administration, for use by national and regional documentation centres for information analysis, retrieval, and exchange. \$94 600 — 18 months.

**84-1022 REMOTE-SENSING RESEARCH AND TRAINING WITH DIGITAL IMAGE PROCESSING (CHINA-CANADA)**

For the State Science and Technology Commission, Beijing, and the University of Waterloo to build the research and training capacity within China in state-of-the-art digital image analysis in remote sensing and to establish closer cooperative links between Chinese and Canadian scientists in the remote-sensing field. \$365 000 — 30 months.

**84-1024 CANADIAN JOURNALS OF RESEARCH — DISTRIBUTION EXPERIMENT (CANADA)**

For the Canadian Organization for Development through Education, Ottawa, to place sets of the 12 Canadian journals of research published by the National Research Council in approximately 100 selected institutions in the developing world to test delivery channels and to evaluate the usefulness of Canadian scientific information to researchers in developing countries. \$200 000 — 36 months.

**84-1046 MICROFORM STORAGE EXPERIMENT (INDONESIA-CANADA)**

For the Pusat Dokumentasi Ilmiah Nasional, Jakarta, and the Bank of Canada to test the transferability of a low-cost system for microform storage using hermetically sealed pouches. \$62 850 — 18 months.

**84-1049 RESOURCE MAPPING OF THE SOKOTO-RIMA BASIN (NIGERIA-CANADA)\***

For the University of Lagos and the University of

Waterloo to produce, for the Sokoto-Rima River Basin Development Authority, updated maps on land use and potential for development purposes and to provide researchers and students at the University of Lagos with better access to and apprenticeship in modern technology such as digital processing and remote sensing. \$328 530 — 36 months.

## Office of Planning and Evaluation

### 84-0172 REVIEW OF EVALUATION SYSTEMS (THAILAND)

For the Research and Development Institute of Kasetsart University, Bangkok, to collect, correlate, and assess the available information on past and present evaluations of agricultural and natural resources research programs in Thailand. \$32 717 — 18 months.

## Social Sciences

### 83-0267 MACROECONOMIC POLICY (TURKEY)\*

For Bogazici Universitesi, Istanbul, to formulate a macroeconomic strategy for Turkey with particular reference to short-term stabilization of the economy, further development of the financial sector, and evaluation of the structure of protection. \$66 650 — 18 months.

### 83-0346 INSTITUTIONAL SUPPORT GRANT FOR CEDES (ARGENTINA)

For the Centro de Estudios de Estado y Sociedad, Buenos Aires, to undertake a wide range of research, training, and dissemination activities with the objective of strengthening its research infrastructure. \$93 750 — 24 months.

### 83-0348 INTERNATIONAL CONTRACT LABOUR (THAILAND)

For Chiang Mai University, with Khon Kaen University, Muang Khon Kaen, to investigate the characteristics of temporary labour migration from Thailand to the Middle East and its economic and social impact on the sending communities. \$86 600 — 30 months.

### 83-1030 COOPERATIVE ENTERPRISES AND RURAL DEVELOPMENT (INDIA-CANADA)

For the University of Delhi and McGill University, Montreal, to analyze what factors account for the success or failure of different kinds of cooperatives in different regions of India and to determine the contribution of cooperative enterprises to rural development. \$320 300 — 36 months.

### 84-0005 URBAN HEALTH SERVICES (SUDAN)

For the University of Khartoum to enable the Institute of Environmental Studies, Addis Ababa, to examine the provision of health services in Greater Khartoum within the context of rapid urban growth, with a view to recommending ways of improving health-services delivery to the low-income groups. \$60 600 — 18 months.

### 84-0006 URBAN GROWTH MANAGEMENT (IVORY COAST)

For the Université d'Abidjan to enable its Centre for Architectural and Urban Research to study the institutional, administrative, and financial framework for urban growth management in Ivory Coast. \$45 900 — 18 months.

### 84-0007 SADRA SUPPORT (SOUTHERN AFRICA)\*

For the National University of Lesotho, Roma, to enable the Southern African Development Research Association (SADRA) to establish itself as a credible organization, promoting and organizing social sciences research in the region. \$30 000 — 24 months.

### 84-0008 OSSREA SUPPORT (EAST AFRICA) — PHASE II

For the Organization for Social Science Research in Eastern Africa (OSSREA), Addis Ababa, Ethiopia, to continue promoting and organizing social science research in the Eastern Africa region. \$85 300 — 24 months.

### 84-0009 URBAN GROWTH MANAGEMENT (ZAIRE)

For the Department of Public Works and Land-Use Planning, Kinshasa, to enable the Office of Urban Land-Use Planning Studies to analyze the management of basic public services in Kinshasa. \$33 100 — 18 months.

### 84-0010 NATURAL HAZARDS AND URBAN SERVICES (BOLIVIA)

For the Centro de Investigación y Consultoría, La Paz, to analyze the impact of natural disasters on the urban services and standards of living in Potosi and Santa Cruz. \$46 200 — 9 months.

### 84-0011 URBAN FACILITIES IN DAKAR (SÉNÉGAL)

For the Ministry of Urban Planning, Housing and the Environment, Dakar, to enable the Housing, Urban Planning and Land-Use Planning Research Centre to study and to recommend facilities standards for improving urban planning. \$48 600 — 18 months.

### 84-0014 HOUSING POLICY AND THE URBAN POOR (BRAZIL)

For the Instituto Universitário de Pesquisas, Rio de Janeiro, to analyze recent government housing policies related to the low-income population in the Rio de Janeiro area. \$65 000 — 18 months.

### 84-0017 NATIONAL COMMUNICATIONS POLICY (BRAZIL)

For the Centro Brasileiro de Estudos Latino-Americanos, Rio de Janeiro, to analyze the social and cultural role of the mass media in Brazil from 1978-1984. \$16 300 — 18 months.

### 84-0018 LIVING CONDITIONS OF SÃO PAULO'S WORKING CLASS (BRAZIL)

For the Center for Studies of Contemporary Culture, São Paulo, with the Interunion Department of

Statistics and Socioeconomic Studies to analyze the living conditions of the working class of São Paulo. \$80 000 — 12 months.

**84-0019 FOOD CONSUMPTION AND THE URBAN POOR (BOLIVIA)**

For the Centro de Estudios de la Realidad Económica y Social, La Paz, to study food consumption among the low-income population of La Paz. \$57 000 — 12 months.

**84-0023 PUBLIC FINANCE (MIDDLE EAST)**

For the Istituto Affari Internazionali, Rome, Italy, to commission a series of comparative research studies on public finance in the Arab world, by eminent Arab scholars. \$63 600 — 12 months.

**84-0025 SERVICES FOR URBAN FACTORY WORKERS (KOREA)**

For Han-Yang University, Seoul, to enable its Department of Sociology to build a statistical and analytical profile upon which to design appropriate policies and programs for the improvement of services for factory workers in urban Korea. \$67 500 — 18 months.

**84-0041 REGIONAL SOCIOECONOMIC IMPACTS OF EXPORT PROCESSING ZONES (ASIA)**

For the Seoul National University, Korea, the University of the Philippines, Quezon City, and the Centre for Hong Kong and Macao Economic Studies, Guangzhou, China, to study the social and economic impacts and the likely side-effects arising from the development of export processing zones, and to make strategic recommendations to policy-makers and program planners. \$231 400 — 18 months.

**84-0049 SOCIAL-ECONOMIC CORRELATES OF CHILD NUTRITION (ARGENTINA)**

For the Sociedad de Salud Pública de Cordoba to assess biological, intellectual, social-economic, and cultural correlates of chronic child malnutrition to propose new approaches to reducing child malnutrition. \$93 800 — 18 months.

**84-0055 CHANGING CLASS STRUCTURE (CHILE)**

For SUR, Profesionales Consultores Ltda, Santiago, to analyze changes in the structure and aspirations of the Chilean middle class over the last 10 years. \$81 800 — 18 months.

**84-0056 ECONOMIC RESTRUCTURING (URUGUAY)**

For the Centro de Investigaciones Económicas, Montevideo, to carry forward detailed research on economic restructuring in Uruguay and to explore a variety of alternate policy directions for the future. \$182 400 — 24 months.

**84-0058 CHANGING AUDIENCES OF MASS MEDIA IN MONTEVIDEO (URUGUAY)**

For the Centro Latinoamericano de Economía Humana, Montevideo, to assess the impact of television in

terms of changes in the attitudes, opinions, and expectations of different social groups. \$26 600 — 12 months.

**84-0062 ICRISAT BRIDGING GRANT (WEST AFRICA)**

For the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, to provide continuing support for rural economics research in West Africa for a period of 1 year to allow for the development of a satisfactory phase II project proposal. \$200 000 — 12 months.

**84-0064 TECHNOLOGICAL PERSPECTIVES (LATIN AMERICA)**

For the United Nations University, Tokyo, Japan, to support a network of researchers in Latin America undertaking exploratory studies aimed at identifying long-term strategies for science and technology policies in the region. \$97 150 — 18 months.

**84-0068 POPULATING THE NORTHEAST REGION OF IVORY COAST**

For the Université d'Abidjan to enable the Institute of Tropical Geography to undertake field studies aimed at shedding light on the problems of development in the sparsely populated northeast region. \$128 900 — 24 months.

**84-0070 INFANT AND CHILD MORTALITY (SOUTHEAST ASIA)**

For the Population Council, New York, USA, to increase the scientific base of knowledge on the factors affecting infant and child mortality in Southeast Asia. \$300 000 — 36 months.

**84-0071 URBAN DEVELOPMENT AND POLICIES (ECUADOR)**

For the Centro de Investigaciones Ciudad, Quito, to analyze urban development and urbanization policies in Ecuador and to make appropriate recommendations. \$246 000 — 36 months.

**84-0083 WOMEN AND THE PARTICIPATION OF LOW-INCOME HOUSEHOLDS IN URBAN SERVICES (PERU)**

For the Instituto de Estudios Socio-Económicos y Fomento del Desarrollo, Lima, to enable the working group "Urban Services and Low-Income Women" to produce information about the participation of women in the procurement of urban social services. \$71 600 — 19 months.

**84-0084 EVALUATION OF HOUSING COOPERATIVES (LATIN AMERICA)**

For the Asociación Latino Americana para la Promoción del Habitat, del Urbanismo y de la Arquitectura, Quito, Ecuador, to analyze, using a comparative methodology, seven housing cooperatives in six Latin American countries. \$67 200 — 12 months.

**84-0085 POPULAR HOUSING IN AREQUIPA (PERU)**

For the Centro de Estudios para el Desarrollo Regional, Arequipa, to study the technical, economic, social, and organizational aspects of popular housing in the *pueblos jóvenes* (shanty towns) of Arequipa. \$42 200 — 12 months.

**84-0086 CULTURAL POLICIES (PERU)**

For the Grupo de Estudios para el Desarrollo. Lima, to identify and analyze the cultural policies carried out by the government over the last 20 years. \$32 700 — 7 months.

**84-0087 MASS AND ALTERNATIVE MEDIA (BOLIVIA)**

For the Centro de Investigación y Consultoría. La Paz, to provide recommendations for media policy based on lessons learned from the analysis of alternative communication experiences in Bolivia. \$37 200 — 12 months.

**84-0089 EDUCATION RESEARCH DEVELOPMENT PROJECT (WEST AFRICA)**

For IDRC's Social Sciences Division to support and undertake research and related activities aimed at enhancing the vitality of the research community in West Africa. \$88 700 — 24 months.

**84-0090 HANDICRAFTS STUDIES V (MALAYSIA)**

For the Malaysian Handicrafts Development Corporation. Kuala Lumpur, to study the contributions that handicrafts make to the national economy and to analyze the constraints to growth within handicraft industries. \$81 400 — 12 months.

**84-0093 AGRICULTURAL ORGANIZATIONS (BRAZIL-CHILE)**

For the Facultad Latinoamericana de Ciencias Sociales. Santiago, to study the structure and behaviour of organizations representing large agricultural producers. \$49 800 — 18 months.

**84-0094 ENERGY IMPLICATIONS OF INDUSTRIAL DEVELOPMENT STRATEGIES (CHILE)**

For the Corporación de Promoción Universitaria. Santiago, to analyze and compare alternative strategies of industrial development with special emphasis on the implications for energy demand and supply. \$82 300 — 18 months.

**84-0095 NEW FORMS OF INVESTMENT (YUGOSLAVIA)**

For the Research Centre for Cooperation with Developing Countries. Ljubljana, to study the motivations and behaviour of Yugoslav firms investing in developing countries. \$29 300 — 12 months.

**84-0096 HANDICRAFTS STUDIES VI (INDONESIA)**

For the Universitas Gadjah Mada, Yogyakarta, the Universitas Udayana, Denpasar, and Lembaga Pengembangan Teknologi Pedesaan, Java, to study the contribution that handicrafts make to the national economy of Indonesia and to analyze the constraints to growth within handicraft industries. \$88 550 — 12 months.

**84-0098 MALARIA IN THE AMAZON FRONTIER (BRAZIL)**

For the Centro de Desenvolvimento e Planejamento Regional, Belo Horizonte, to develop and test a methodology for the analysis of the social, economic,

cultural, and environmental correlates of malaria prevalence in a selected area of the Amazon region of Brazil. \$94 300 — 18 months.

**84-0100 TECHNOLOGY POLICY FAILURES (NIGERIA)**

For the Nigerian Institute of Social and Economic Research, Lagos, to examine various technology policy initiatives undertaken in different sectors during the past decade to determine why they failed. \$35 800 — 18 months.

**84-0101 PEASANT TECHNOLOGY SURVEY (PARAGUAY) — PHASE II**

For the Centro Paraguayo de Estudios Sociológicos. Asunción, to support a further analysis and diffusion of the material collected in the first phase of this project. \$97 000 — 15 months.

**84-0107 AGRICULTURE-POPULATION INTERRELATIONS IN EASTERN PROVINCE (ZAMBIA)**

For the University of Zambia, Lusaka, to enable its Rural Development Studies Bureau to study and analyze the interrelationships between agriculture and population in Zambia's eastern province. \$91 000 — 30 months.

**84-0108 FUEL ALCOHOL TECHNOLOGY POLICY (KENYA AND OTHER AFRICAN COUNTRIES)**

For the Public Law Institute, Nairobi, to gain an understanding of the technology and energy policies relevant to the development of power alcohol technology. \$74 000 — 18 months.

**84-0109 IMPACT OF URBAN DEVELOPMENT (JORDAN)**

For the Municipality of Amman, Jordan, to enable the Urban Development Department to evaluate the impact of its programs in five squatter areas of Amman. \$82 500 — 18 months.

**84-0110 MANUFACTURING SECTOR (LESOTHO)**

For the National University of Lesotho, Roma, to enable the Institute for Southern African Studies to analyze and evaluate industrial policy in the manufacturing sector of Lesotho. \$33 500 — 12 months.

**84-0118 QUECHUA SONGS FOR RADIO PROGRAMS (PERU)**

For the Centro Peruano de Estudios Sociales. Lima, to undertake a systematic compilation of Quechua songs in Peru. \$30 100 — 12 months.

**84-0123 ASSESSMENT OF EDUCATIONAL RADIO PROGRAMS (PERU)**

For the Centro Peruano de Estudios Sociales. Lima, to assess the efficiency of alternative radio programs in rural areas of Peru. \$24 000 — 6 months.

**84-0124 MONTENEGRO SURVEY (YUGOSLAVIA)**

For the Poljoprivredni Institute, Titograd, to carry out a survey of agricultural resources and production in the Montenegro Republic of Yugoslavia. \$65 500 — 36 months.

**84-0125 TECHNICAL CHANGE IN TRUCK MANUFACTURING (TURKEY)**

For Part Pazar Arastirma A.S., Istanbul, to contribute to the understanding of the processes of technical change in the manufacturing sector of developing countries by comparing truck manufacturing in plants with different types of ownership. \$36 000 — 30 months.

**84-0131 HOUSEHOLD ENERGY CONSUMPTION IN RIO DE JANEIRO SHANTYTOWNS (BRAZIL)**

For the Colegio da América Latina, Rio de Janeiro, to determine energy demand patterns of shantytown dwellers in that city. \$24 300 — 9 months.

**84-0145 THE SCHOOL'S ROLE IN DEVELOPING CIVIC VALUES (PERU)**

For the Pontificia Universidad Católica del Perú, Lima, to enable its Department of Social Sciences to examine the knowledge and values transmitted by secondary schools regarding social, economic, and political conditions of Peru. \$134 000 — 18 months.

**84-0150 SPECIAL RESEARCH AWARDS SCHEME (CENTRAL AMERICA)**

For the Confederación Universitaria Centroamericana, San José, Costa Rica, to allow Central Americans unable to pursue their professional activities without assistance to continue their research on social and economic issues in the region. \$181 900 — 24 months.

**84-0151 SITES AND SERVICES (SÉNÉGAL) — PHASE III\***

For the Office des habitations à loyer modéré, Dakar, to enable the Sites and Services Project Evaluation Office to prepare an exhaustive and final research assessment and evaluation of the Sites and Services operation in Dakar. \$30 400 — 24 months.

**84-0157 SCIENCE AND TECHNOLOGY POLICY RESEARCH PROGRAM (MEXICO)**

For the Colegio de México, Mexico City, to support the program of research and associated activities currently being undertaken by the Programa de Ciencia, Tecnología y Desarrollo. \$455 800 — 36 months.

**84-0161 TEACHING READING IN BILINGUAL CLASSROOMS (PARAGUAY)**

For the Centro Paraguayo de Estudios Sociológicos, Asunción, to examine the sociolinguistic context of selected bilingual areas of Paraguay in order ultimately to improve the teaching of reading to first graders. \$80 300 — 18 months.

**84-0164 TECHNOLOGY POLICY STUDIES NETWORK (WEST AFRICA)**

For IDRC's Social Sciences Division to enable West African researchers to examine technology policy issues and meet on a regular basis for discussions of work in progress and research findings. \$294 000 — 30 months.

**84-0165 SCHOOL AND COMMUNITY (BOLIVIA) — PHASE III**

For the Centro Boliviano de Investigación y Acción

Educativas, La Paz, to undertake a systematic program of research, teacher training, and dissemination, oriented toward designing and experimenting with alternative models of schooling. \$122 600 — 24 months.

**84-0167 RURAL EDUCATION EVALUATION (SIERRA LEONE)**

For the University of Sierra Leone, Freetown, to enable the Science Curriculum Development Centre of Njala University College to evaluate a major pilot program developed by the Ministry of Education to make education more relevant to life in rural areas. \$172 400 — 36 months.

**84-0168 INSTITUTIONAL SUPPORT FOR THE ACADEMIA DE HUMANISMO CRISTIANO (CHILE) — PHASE II**

To support the core activities of the Academia de Humanismo Cristiano, Santiago, and to strengthen the organization of its overall work. \$300 000 — 36 months.

**84-0169 MEAWARDS (EGYPT) — PHASE III**

For the Population Council, New York, USA, to promote the continued growth of knowledge and research capacity in the area of population and development, in the Middle East and North Africa, through a series of research awards and associated technical support. \$165 000 — 24 months.

**84-0176 POPULAR THEATRE FOR DEVELOPMENT (CAMEROON)**

For the University of Yaoundé to elaborate, test, and refine the methods of popular theatre as a form of development-oriented adult education relevant to African cultures. \$20 500 — 12 months.

**84-0179 INDIGENOUS PARTICIPATION AND RESOURCE MANAGEMENT IN THE COLOMBIAN AMAZON (COLOMBIA)**

For the Fundación Estación Biológica de Puerto Rastrojo, Bogotá, to investigate how indigenous communities can participate in the development of the Colombian Amazon region. \$98 700 — 24 months.

**84-0184 RESEARCH METHODOLOGY TRAINING PROGRAM (INDONESIA) — PHASE II**

For Universitas Gadjah Mada, Yogyakarta, to enable its Population Studies Centre to conduct a series of research workshops geared toward upgrading the skills of university-based researchers involved in studies of population and development. \$60 000 — 24 months.

**84-0189 ECONOMY OF FOOD GRAINS (IVORY COAST)**

For the Université d'Abidjan to study the production, marketing, and consumption of maize, sorghum, and millet in the northern region of Ivory Coast. \$52 000 — 24 months.

**84-0190 IMPACT OF INTEGRATED POPULATION PROGRAMS (MALAYSIA) — PHASE II**

For the Universiti Malaya, Kuala Lumpur, to examine

the household socioeconomic and demographic impacts of population-development programs in traditional rural areas. Federal Land Development Authority rural areas, and poor urban areas. \$91 500 — 18 months.

**84-0192 EXCHANGE RATE POLICY AND DETERMINANTS OF PERSONAL SAVINGS (PERU)**

For the Grupo de Análisis para el Desarrollo, Lima, to support research into the determinants of personal savings and into the relationship between inflation and devaluation in the Peruvian economy. \$76 700 — 18 months.

**84-0198 SKILLS TRAINING OF THE SHORT-TERM OFFENDER (ZIMBABWE)**

For the Zimbabwe Association for Crime Prevention and Rehabilitation of the Offender, Harare, to examine the viability and the impact of introducing skills training programs for short-term offenders. \$14 050 — 10 months.

**84-0199 READING COMPETENCE OF SECONDARY SCHOOL STUDENTS (TANZANIA)\***

For the University of Dar es Salaam to analyze the difficulties encountered by Tanzanian secondary-school students in reading and comprehending prescribed textbooks in various subject areas of the curriculum. \$21 240 — 18 months.

**84-0201 EDUCATIONAL RESEARCH ENVIRONMENT AND CAPACITY (SRI LANKA)**

For the Marga Institute, Colombo, to provide a state-of-the-art assessment of the educational research environment, output, and capacity in contemporary Sri Lanka. \$18 500 — 18 months.

**84-0204 MANAGEMENT OF OBLIGATORY PRIMARY EDUCATION (INDONESIA)\***

For the Sebelas Maret University, Surakarta, to collect and analyze baseline data for use in establishing and evaluating appropriate management systems for obligatory primary education in selected areas of Indonesia. \$95 000 — 36 months.

**84-0205 TRENDS IN FERTILITY AND CONTRACEPTIVE PRACTICE (BRAZIL)**

For the Instituto Oswaldo Cruz, Rio de Janeiro, to enable the Escola Nacional de Saude Publica to determine the reasons underlying the fertility decline in the southeastern region of Brazil from 1960 to 1980. \$20 600 — 18 months.

**84-0209 MACROECONOMIC RESEARCH (BRAZIL) — PHASE II**

For the Pontificia Universidade Católica, Rio de Janeiro, to enable its Department of Economics to conduct further work on a model of the Brazilian economy and to initiate research into the country's financial system. \$94 550 — 18 months.

**84-0211 ASIAN FISHERIES SOCIAL SCIENCES RESEARCH NETWORK — PHASE II**

For the International Center for Living Aquatic Resources Management, Manila, Philippines, to

support an expanded network of institutions in Southeast Asia that will address key issues affecting the development of capture fisheries and aquaculture. \$600 000 — 36 months.

**84-0221 POLICY ALTERNATIVES FOR THE MINING INDUSTRY (BOLIVIA)**

To enable the Instituto de Formación y Capacitación, Cochabamba, to suggest alternative policies for the management of the tin industry and to evaluate the economic and political feasibility of implementing those policies. \$59 320 — 12 months.

**84-0223 COMPUTER-RELATED INDICATORS (LATIN AMERICA)**

For the Intergovernmental Bureau for Informatics—Centro Regional para América Latina y el Caribe, Mexico City, to review and revise the definitions and meaning of computer-related information technology indicators and propose ways in which the indicators and their collection can be improved. \$203 500 — 24 months.

**84-0236 COMISIÓN NACIONAL INFORMATICA (ARGENTINA)**

For the Asociación Argentina para el Desarrollo Tecnológico, Buenos Aires, to support three related policy studies that will contribute to the understanding and development of an informatics policy in Argentina. \$169 700 — 12 months.

**84-0238 INSTITUTIONAL SUPPORT GRANT FOR CISEA (ARGENTINA) — PHASE II**

For the Centro de Investigaciones Sociales sobre el Estado y la Administración (CISEA), Buenos Aires, to consolidate its current activities by strengthening its management, infrastructure, and research capability. \$330 000 — 36 months.

**84-0239 TRAINING, PLACEMENT, AND PERFORMANCE OF TECHNICAL HIGH-SCHOOL TEACHERS (ETHIOPIA)**

For Addis Ababa University to investigate the performance and utilization of technical teachers and whether their training adequately prepares them for teaching positions in technical and vocational schools. \$41 475 — 24 months.

**84-0246 FAMILY-SCHOOL RELATIONS (ARGENTINA)**

For the Facultad Latinoamericana de Ciencias Sociales, Buenos Aires, to examine the role of parents, teachers, and school administrators in the education of children and to explore ways in which communication between school and family might be improved. \$95 500 — 34 months.

**84-0248 RURAL INDUSTRY (BURKINA FASO)**

For the Centre d'étude, de documentation, de recherches économique et social of the Université de Ouagadougou to assess the feasibility and potential of small-scale rural industry, specifically the processing of shea nuts and peanuts. \$68 160 — 18 months.



**84-0249 TECHNICAL CHANGE AND REGIONAL POLICY (BRAZIL)**

For the Fundação de Ensino Superior de Pernambuco, Recife, to enable the Universidade de Pernambuco to assess the impact of industrial assistance programs on technological modernization in the textile, metals, and petrochemical industries in northeastern Brazil. \$62 600 — 12 months.

**84-0250 EVALUATION OF ENERGY-USE PATTERNS AND SYSTEMS IN SELECTED REGIONS (GUYANA)\***

For the University of Guyana, Georgetown, to enable its Institute of Development Studies to evaluate energy systems and patterns of usage in selected areas and make recommendations regarding energy policy and conservation. \$42 800 — 24 months.

**84-0251 CHILD LABOUR AND THE SCHOOL IN RURAL CHILE**

For the Facultad Latinoamericana de Ciencias Sociales, Santiago, to study the relation between child labour and school performance by examining school attendance, desertion, repetition, and academic achievement among children from rural families. \$67 900 — 18 months.

**84-0252 TAX REFORM (COLOMBIA)**

For the Fundación para la Educación Superior y el Desarrollo, Bogotá, to study the formulation, implementation, and modification of Colombian tax reform between 1974 and 1983 with a view to designing further tax reform. \$62 900 — 12 months.

**84-0253 INDUSTRIAL POLICY (PERU)**

To enable the Universidad del Pacífico, Lima, to analyze the effects of neo-liberal policies on the industrial sector from 1980 to 1984. \$88 600 — 24 months.

**84-0256 FOREST LAND-DEVELOPMENT POLICY (PHILIPPINES)**

For the Philippine Institute for Development Studies, Makati, to enable the Center for Policy and Development Studies of the University of the Philippines, Los Baños, to complete a program of studies that provide for a holistic and economically rational set of public policies toward forest land management and development. \$44 800 — 24 months.

**84-0259 INDUSTRIAL RESTRUCTURING (INDIA)**

For the Indian Council for Research on International Economic Relations, New Delhi, to formulate more precisely the content and methods of its proposed study on industrial restructuring for export expansion. \$66 000 — 6 months.

**84-0264 SOCIOECONOMIC CONSEQUENCES OF MIGRATION FOR WOMEN IN SENDING AREAS (NIGERIA)\***

For the University of Ibadan to measure and assess the impact of out-migration on family-based agriculture where women are the heads of households and agricultural producers. \$93 800 — 21 months.

**84-0276 MICROCOMPUTER SOFTWARE FOR RESEARCH ON ARTISANAL FISHERIES (CHILE)**

For the Universidad Católica de Valparaíso to develop a series of microcomputer software programs for use in data analysis of artisanal fisheries research programs in Chile and elsewhere in Latin America. \$46 475 — 6 months.

**84-0277 ACTION RESEARCH NETWORK FOR EDUCATION AND DEVELOPMENT (INDONESIA)\***

For the Institute for Social and Economic Research, Education and Information, Jakarta, to enhance the capacity of Indonesian nongovernmental development organizations to conduct action research activities to increase the impact and effectiveness of their community development and education programs. \$160 000 — 30 months.

**84-0281 OPEN UNIVERSITY TUTORIAL SYSTEMS (INDONESIA)**

For the Indonesian Open University, Jakarta, to enable the Centre for Research and Public Service to investigate various aspects of the open university tutorial system, for the purpose of improving its quality and efficiency. \$55 000 — 24 months.

**84-0282 TEACHING DEVELOPMENT STUDIES (LESOTHO)**

For the National University of Lesotho, Roma, to enable its Institute of Southern African Studies to monitor the effects of teachers' efforts to alter traditional teaching-learning patterns. \$11 400 — 12 months.

**84-0284 MACROECONOMIC ANALYSIS (PERU)**

For the Universidad del Pacífico, Lima, to develop a macroeconomic model of the Peruvian economy with reference to distinctive structural and institutional features. \$69 400 — 18 months.

**84-0285 SAVINGS, INVESTMENT, AND FINANCIAL MARKETS (LATIN AMERICA)**

For the Centro de Estudios de Estado y Sociedad, Buenos Aires, Argentina, to link up IDRC-supported research initiatives in Latin America in the area of savings, investment, and financial markets to encourage more systematic collaboration in the areas of policy analysis, economic theory, and applied research. \$67 000 — 18 months.

**84-0290 ROLES OF THE ELEMENTARY SCHOOL PRINCIPAL (LIBERIA)**

For the University of Liberia, Monrovia, to assess the extent to which the level of training that principals receive prepares them for their required tasks. \$31 100 — 15 months.

**84-0295 ASSESSMENT OF EDUCATIONAL REFORMS (JAMAICA)**

For the Institute of Social and Economic Research, University of the West Indies, Mona, to examine the relationships between the economy, social stratification, and education in critical periods of Jamai-

ca's history, most particularly in the last 30 years. \$54 500 — 12 months.

**84-0296 COMMUNITY ADAPTATION AND MIGRATION (PERU)**

For the Centro Peruano de Estudios Sociales. Lima, to conduct research on regional development and community response that will be relevant to program planning and implementation in Peru. \$66 800 — 12 months.

**84-0299 OUTGROWER SCHEMES (GHANA)\***

For the University of Ghana, Legon. Accra, to enable its Department of Political Science to study the operation of three oil palm outgrower schemes whereby a central processing or exporting unit purchases the harvests of independent farmers and provides them with credit, inputs, machinery rentals, and technical advice. \$74 200 — 12 months.

**84-0300 FINANCIAL MARKETS (ARGENTINA) — PHASE II**

For the Centro de Estudios de Estado y Sociedad. Buenos Aires, to continue its analysis of the financial market in Argentina and to design measures to improve the market's performance and to make macroeconomic policy more effective. \$87 600 — 18 months.

**84-0301 TEACHER-TRAINING EVALUATION (JAMAICA)\***

For the University of the West Indies, Mona, to enable the School of Education to assess the efficacy of Jamaica's new teacher-training program and the quality of its graduating teachers. \$29 700 — 30 months.

**84-0303 EFFECTS OF ADULT LITERACY (KENYA)\***

For the Ministry of Culture and Social Services. Nairobi, in collaboration with Kenyatta University College and the University of Nairobi, to determine the extent to which Kenya's literacy program has an impact on the lives of participants. \$59 400 — 24 months.

**84-0307 SKILL EDUCATION AND EMPLOYMENT (INDONESIA)\***

For the Universitas Kristen Satya Wacana, Salatiga, to examine the relationship of skill education in selected secondary schools and nonformal programs to work opportunities and the local employment situation. \$44 000 — 12 months.

**84-0313 TERMS OF TRADE OF RURAL COMMUNITIES (SRI LANKA)**

For the Marga Institute, Colombo, to provide information to Sri Lankan policymakers on changes in incomes and purchasing power in the rural sector. \$72 600 — 36 months.

**84-0314 CHARACTERISTICS OF OFF-CAMPUS PROGRAM STUDENTS (MALAYSIA)\***

For the Universiti Sains Malaysia, Minden, Penang, to develop a profile of mature students enrolled in the off-campus program and to relate their characteristics to their academic performance. \$55 000 — 24 months.

**84-0317 IRRIGATION, DEVELOPMENT, AND DEMOGRAPHIC CHANGE (INDIA)\***

For the University of Mysore to examine the social and economic consequences of changing patterns of migration, settlement, land use, and agricultural development in the Tungabhadra irrigation area. \$84 200 — 24 months.

**84-0318 MILK MARKETS (SRI LANKA)**

For the University of Peradeniya to analyze the cost and effectiveness of alternative policies and programs aimed at encouraging increased consumption of milk and milk products by the poor and undernourished. \$23 800 — 24 months.

**84-0320 AGRARIAN STRUCTURE AND AGRICULTURAL POLICY IN PARAIBA (BRAZIL)\***

For the Universidade Federal da Paraíba, Campina Grande, to describe and analyze the evolution of agrarian structure in Paraíba and to assess the impact of the main instruments of federal and state policy on the agricultural sector. \$83 310 — 24 months.

**84-0325 SETTLEMENT OF NOMADS (MALI)\***

For the Malian Livestock and Meat Office, Bamako, to study the phenomenon of settlement of nomads and to analyze its demographic, social, and economic implications. \$78 500 — 21 months.

**84-0326 COMMON LAW AND THE CONGOLESE FAMILY (CONGO)\***

For the General Management of Scientific and Technical Research, Brazzaville, to collect data to develop a family code that takes into account both traditional and modern ways of life. \$44 200 — 21 months.

**84-0327 URBAN SELF-EMPLOYED WORKERS (BOLIVIA)\***

For the Centro de Información y Documentación para el Desarrollo Regional, Cochabamba, to analyze the sociodemographic characteristics of self-employed workers and the economic characteristics of their family enterprises in the cities of La Paz, Cochabamba, and Santa Cruz. \$97 000 — 24 months.

**84-0328 SMALLHOLDER LIVESTOCK DEVELOPMENT (THAILAND)\***

For Kasetsart University, Bangkok, to introduce cattle-fattening enterprises as either complements to or partial substitutes for existing crop and backyard livestock production by smallholder farmers in Thailand. \$76 700 — 36 months.

**84-0332 AGRO-INDUSTRY STUDIES (WEST BANK)\***

For Al-Najah National University, Nablus, to carry out up to six socioeconomic feasibility studies on those agro-industries that show the most promise for stabilizing agricultural markets in the West Bank and Gaza. \$95 500 — 24 months.

**84-0335 ARTISANAL FISHERIES (KENYA)**

For the University of Nairobi to provide information on the problems of the small-scale freshwater fishing industry in the Lake Victoria region and to contribute to the definition of policies to help the sector to achieve its potential. \$37 150 — 26 months.

**84-0337 OCCUPATIONAL BENEFITS OF OPEN UNIVERSITY EDUCATION (THAILAND)\***

For the Sukhothai Thammathirat Open University, Bangkok, to enable its Office of Institution Research to assess the extent to which its graduates are able to use the knowledge, skills, and credentials of its program to enhance their occupational performance and status. \$59 900 — 18 months.

**84-0341 EVALUATION OF FIELD-BASED TEACHER TRAINING (PAKISTAN)\***

For the Aga Khan Foundation, Geneva, Switzerland, in collaboration with the National Institute of Psychology, Pakistan, to assess the extent to which a field-based teacher-training program has had an actual impact on teaching quality once graduates return to their respective schools. \$41 300 — 13 months.

**84-0343 TECHNICAL CHANGE AND LABOUR UTILIZATION (LATIN AMERICA) — PHASE I\***

For IDRC's Social Sciences Division to permit four researchers to review the methods and comparisons required for a study of the potential impact of microelectronic-based technologies on employment, skills, and the reorganization of tasks in a number of plants. \$48 000 — 6 months.

**84-0345 PRIMARY SCHOOL OPPORTUNITY COSTS (BANGLADESH)\***

For the University of Dhaka to determine the cost, in terms of loss of earning opportunity, of primary education for school-aged children in areas of low school participation in Bangladesh. \$42 500 — 18 months.

**84-0347 NGOS AND SHELTER PROVISION (GLOBAL)\***

For the International Institute for Environment and Development, London, United Kingdom, to analyze and promote the present and potential role of nongovernment organizations in shelter construction, upgrading, and maintenance in developing countries. \$65 600 — 12 months.

**84-0348 ENERGY PLANNING AND RURAL ENERGY STUDIES (INDIA)**

For the Tata Energy Research Institute, New Delhi, to support a set of five studies on energy planning, development of newly discovered natural gas resources, and issues in energy use in rural areas. \$90 200 — 18 months.

**84-1004 COOPERATIVE EDUCATIONAL RESEARCH (CHILE-CANADA)**

For the Centro de Investigación y Desarrollo de la Educación, Santiago, the Academia de Humanismo Cristiano, Santiago, and the Ontario Institute for Studies in Education, Toronto, to examine selected educational problems and to experiment with possible solutions. \$266 600 — 24 months.

**84-1005 URBAN GROWTH MANAGEMENT (AFRICA)**

For the University of Toronto to enable the Institute for Environmental Studies to strengthen and build upon selected urban research projects supported by

IDRC and to improve the dissemination of their research results. \$327 600 — 24 months.

**84-1021 SCHOOL FAILURE IN THE FRENCH CARIBBEAN (HAITI, MARTINIQUE, AND GUADELOUPE)\***

For the Université d'État (Haiti), the Université Antilles-Guyane (Martinique Guadeloupe), and the Université de Montréal to collect comparative data on school failure, including its socioeconomic, linguistic, and attitudinal aspects. \$165 700 — 24 months.

**84-1025 ECONOMIC STRATEGY (TUNISIA) — PHASE II**

For the Ministry of Planning, Tunis, and the Université de Montréal to enable the Institut d'économie quantitative of the Ministry and the Centre de recherche en développement économique of the Université to further investigate the efficiency of resource allocation in the Tunisian economy, to continue research in the specification of an economic model, and to examine the labour market. \$355 000 — 24 months.

**84-1036 TRADE, PROTECTIONISM, AND INDUSTRIAL ADJUSTMENT (SOUTHEAST ASIA)**

For the Institute of Southeast Asian Studies, Singapore, and the North-South Institute, Ottawa, to study the impact of developed market economy (DME) trade restrictions on industrial and trade prospects in both the exporting developing countries and the DMEs with particular reference to East and Southeast Asia, and North America. \$417 175 — 18 months.

**Special Program Activities**

**84-0106 AGRARIAN LAW AND RURAL DEVELOPMENT (INDONESIA)**

For Universitas Hasanuddin, Ujung Pandang, to enable its Faculty of Law to study the effects of agrarian law on customary production-sharing arrangements between landowners and tenants in South Sulawesi. \$36 000 — 14 months.

**84-0117 MULTIPURPOSE DRYERS (IRRI)**

To enable the International Rice Research Institute (IRRI), Los Baños, Philippines, to develop further and field test an IRRI prototype, multicommodity, dryer-storage system. \$447 800 — 36 months.

**84-0128 ENERGY AWARDS — PHASE II**

For IDRC's Fellowships and Awards Division to provide support, from the Centre's Energy Fund, for individual training awards to increase the capability of researchers and institutions in developing countries to undertake energy-related research. \$140 000 — 12 months.

**84-0186 WINDMILL WATER PUMPS (ZAIRE)\***

For the Université de Lubumbashi, Zaire, to enable the Polytechnic Faculty to field test and assess the technical performance of a prototype wind-driven water pump. \$62 095 — 28 months.

**84-0222 VILLAGE POLYTECHNICS (KENYA)\***

For Action Aid, Nairobi, to promote the growth and

stability of Village Polytechnics (vocational training centres) by clarifying their legal status and governance. \$13 340 — 6 months.

**84-0257 FREEDOM OF ASSOCIATION (ASIA)**

For PROCESS, Manila, Philippines, to examine the right to freedom of association in Asia with particular reference to its significance for grass-roots organizations. \$30 800 — 12 months.

**84-0258 HYDRAULIC RAM PUMP (UGANDA)\***

For the Ministry of Lands, Minerals and Water Resources, Entebbe, in collaboration with the Institute of Production Innovation of the University of Dar es Salaam, to assess the "hydram's" potential in Uganda and develop a new generation of lightweight locally made hydrams. \$173 420 — 24 months.

**84-0275 INSTITUTIONAL WOODSTOVES (KENYA)**

For the Kenya Energy Non-Governmental Organizations Association, Nairobi, to develop more efficient wood-burning units for cooking and heating in Kenya's public institutions. \$137 550 — 36 months.

**84-0289 DEFENCE AND DEVELOPMENT IN SOUTHEAST ASIA**

For the Institute of Southeast Asian Studies, Singapore, to bring new perspectives to the analysis of

an important but sensitive field of research. "defence and economic development." \$268 960 — 36 months.

**84-0291 RETAIN: RURAL ENERGY TECHNOLOGY ASSESSMENT AND INNOVATION NETWORK (GLOBAL)\***

For the Science Policy Research Unit, University of Sussex, United Kingdom, the Instituto de Economía Energética, Argentina, the Institute for Techno-Economic and Energy System Analysis, Tsinghua University, China, the Centro de Investigaciones Sociales, Ambientales y Tecnológicas, Costa Rica, and the Asian Institute of Management, Philippines, to analyze and compare methods of rural energy technology assessment and innovation in developing countries. \$528 500 — 30 months.

**84-0330 CONSUMERS' LAW (MALAYSIA) — PHASE II**

For the Consumers' Association of Penang to continue to analyze the law and propose legal reform in various areas of concern to the consumer. \$70 860 — 12 months.

**84-0331 FAMESA — DEVELOPMENT OF TRAINING MANUALS**

For the International Centre of Insect Physiology and Ecology, Nairobi, to develop and adapt training materials for a course on facilities, materials and inventory management. \$86 000 — 12 months.

## Division activity projects

In addition to the projects listed on the preceding pages, the Centre funds numerous relatively small projects that are in one way or another supportive of the ongoing activities of the program divisions. For instance, some are to support workshops or seminars to identify priority-research areas in a particular region or field of activity. Others are to enable developing-country researchers to attend international meetings of experts in other parts of the world. Still others are to provide funds for a specialist from one country to visit and assist a project team in another.

The great majority of such projects are, in fact, to cover the cost of meetings and consultancies directly or indirectly related to Centre-supported research projects in developing countries. During the past fiscal year, 716 division activity projects were approved at a total cost of \$5 441 117. This program funded activities such as:

- A symposium on drought in Africa organized in cooperation with the Canadian International Development Agency and the International Council of Scientific Unions to review the impact of drought and the long-term organized commitment that will be required to alleviate future disasters.
- A seminar in Manila to discuss strategies for maximizing the roles of women in water supply and sanitation activities.
- A national survey of woodstove dissemination activities in Guatemala followed by a workshop to discuss constraints and issues and to establish a national strategy.
- A workshop in Dakar for editors and publishers from Francophone Africa to identify problems and produce a workplan related to scholarly publishing in that region.
- A conference in Abidjan bringing together government representatives and experts from West Africa to review significant local issues on informatics and telematics and to assist in the formation of the Union africaine des professionnels de l'informatique.
- An evaluation of research activities and financial practices at the Sokoine University of Agriculture in Tanzania to assist the institution in developing research policies and plans, and effective management procedures, consistent with the country's national research policies.
- A workshop in Tanzania for Eastern and Southern African researchers to discuss storage, processing, and utilization in sorghum- and millet-improvement programs, to share current research knowledge, and to establish priorities for individual and cooperative research projects.
- Seminars for national social-science researchers and government officials of Sénégal, Ivory Coast, and the Republic of the Congo to bring national development priorities into focus and to discuss ways in which IDRC could assist in achieving these priorities.
- A workshop in Lahore (Pakistan) organized jointly by IDRC and the Pakistan Council of Scientific and Industrial Research to identify research priorities addressing the problems of increasing efficiency and productivity in developing countries' small- and medium-size enterprises.

## Financial commentary and highlights

In 1984-1985, the International Development Research Centre's grant from the Government of Canada continued to increase over previous years. However, the resources available for program appropriations were significantly lower than had been anticipated originally. This reduction followed the government's announcement in November 1984 that the current economic situation had required the government to review the Official Development Assistance (ODA) program and reconsider the pace at which it would proceed toward achieving the target of 0.7% of the Gross National Product (GNP). The revised target for 1985-1986 was set at 0.5% and the achievement of the 0.7% of GNP target was postponed from 1991 to 1995. As a result of this decision, the Centre's grant for 1985-1986 was reduced by \$11 million to \$86 million from earlier projections of \$97 million.

In response to these changes, Centre management made significant adjustments to some of its plans for both 1984-1985 and 1985-1986. The most important modifications consisted of:

- A reduction of \$15.9 million in the appropriations for 1984-1985,
- The elimination of 30 new positions projected for 1985-1986, and
- The decision to close two liaison offices in 1985-1986.

The budget papers tabled in the House of Commons by the Minister of Finance on May 23, 1985 provided for the recovery of \$15 million from the Centre in 1985-1986. The Centre is discussing this proposed transaction with the Canadian government.

During the year, Centre management responded to the Board of Governors' request to place additional emphasis on the growth of the Health Sciences Division. Goals have been set that indicate that Health Sciences will increase its share of total Centre appropriations from 10% in 1984-1985 to 11.9% in 1985-1986 and 18% in 1989-1990. It was also decided that the Energy Research Program will diminish and end in 1987-1988.

In 1984-1985, Centre management initiated a study on the accommodations for the head office in Ottawa. A cost-benefit analysis over a 10-year period was undertaken to investigate whether the Centre should remain at its present location or move to another. Based on the recommendations made in the study, the Board of Governors approved a relocation of the Centre's head office in January 1987.

## Revenue

The Parliamentary grant for 1984-1985, set at \$81.0 million, including \$9.1 million for Cooperative Programs, represented an increment of \$13.6 million over the previous year. Total Centre revenues, excluding funds for contract research, amounted to \$84.2 million for 1984-1985, a 20.2% increase over 1983-1984.

The \$3.2 million of investment and other income during 1984-1985 surpassed the budget target of \$2.5 million by an amount of \$0.7 million. This favourable variance is mainly attributable to the higher monthly average investment balances throughout the year and an actual average yield of 11.1% compared with the budgeted 9.5%. Other income comprises \$126 000 of MINISIS licencing fees and \$18 750 for publications income.

The total 1985-1986 Parliamentary grant to IDRC for regular programs is expected to increase by 4.6% to \$75.2 million and the Cooperative Programs grant by 18.7% to \$10.8 million. The overall increase in Centre revenues should amount to approximately 6%.

## Development research and related expenditure

The Centre strives to maintain a high level of expenditures in the development research and related areas because it is these programs that provide direct support for scientific and technical research to developing countries. The development research category includes support for Centre projects and international research networks as well as projects that are identified, developed, and managed by developing-country researchers. Research related activities consist of a development research library, which serves the Canadian development community as well as IDRC staff and projects, funds for information dissemination, and funds for small projects that are supportive of the ongoing activities of the program divisions.

In 1984-1985, expenditures directly related to the development research category increased 17.8% to \$48.9 million, whereas research related activities increased 25.2% to \$7.7 million.

### EXPENDITURE (\$ million)

	Budget		Actual							
	1986	% of total	1985	% of total	1984	% of total	1983	% of total	1982	% of total
Development research	\$ 54.2	58.7	\$ 48.9	58.1	\$ 41.5	59.2	\$ 34.7	58.7	\$ 30.3	61.1
Research related activities	7.5	8.1	7.7	9.2	6.2	8.9	5.3	9.0	4.1	8.3
Technical support and regional office operations	17.6	19.1	15.2	18.1	12.2	17.4	10.2	17.2	8.2	16.5
<b>Total research and research related</b>	<b>\$ 79.3</b>	<b>85.9</b>	<b>\$ 71.8</b>	<b>85.4</b>	<b>\$ 59.9</b>	<b>85.5</b>	<b>\$ 50.2</b>	<b>84.9</b>	<b>\$ 42.6</b>	<b>85.9</b>
Division management	4.2	4.6	4.0	4.7	3.3	4.7	3.0	5.1	2.3	4.6
Administration	8.8	9.5	8.3	9.9	6.9	9.8	5.9	10.0	4.7	9.5
<b>Total</b>	<b>\$ 92.3</b>	<b>100.0</b>	<b>\$ 84.1</b>	<b>100.0</b>	<b>\$ 70.1</b>	<b>100.0</b>	<b>\$ 59.1</b>	<b>100.0</b>	<b>\$ 49.6</b>	<b>100.0</b>

*Above data do not include amounts related to contract research.*

## Technical support and regional office operations

This category of expenditure includes the cost of program personnel, whose role is to develop new projects, monitor ongoing research projects, and provide technical assistance on projects. Also included are the costs of six regional offices which play an important role in facilitating contact with grant recipients and in enhancing the Centre's ability to respond to Third World development issues. Total expenditures for technical support and regional office operations in 1984-1985 were \$15.1 million, an increment of 24.2% over 1983-1984. However, this category's share of total Centre expenditures represents 18%, a minor increase from the previous year's 17.4%.

The number of professional program staff required for project development and to provide technical assistance to existing projects is related to the level of development research expenditures. Because only limited growth in research programs is expected in 1985-1986, no increase in personnel has been budgeted. As a result, total technical support and regional office expenditures are expected to increase by only 16.1% to approximately \$17.6 million in 1985-1986.



## **Division management**

The costs of operating the IDRC program divisions and, particularly, the costs involved in program management, development, and control are identified as division management. This category totaled \$4.0 million in 1984-1985, an 18.4% increase over 1983-1984, and represented 4.8% of the total IDRC expenditures in 1984-1985.

Division management expenditures are expected to increase by only 5.2% in 1985-1986 to approximately \$4.2 million.

## **Administration expenditure**

To support its overall operations, the Centre requires policy, executive, administrative, and service functions. Within the context of IDRC, such functions are represented by the Board of Governors, the offices of the Executive, Secretary and General Counsel, Comptroller General and Treasurer, and Human Resources.

Administration expenses amounted to \$8.3 million in 1984-1985, an increase of 19.6% over the previous fiscal year. This increase in administration expenditures is comparable to an average 19.8% increase in other categories. As a result, this category's share of total Centre expenditures remained at 9.9% in 1984-1985, the same level as in the previous year.

During 1984-1985, administration expenditures represented 104% of the \$7.9 million budget. The overexpenditure is mainly due to a change in the method of accounting for depreciation. Software costs are now written-off to operations. This change was made to reflect the useful life cycle of a software package and to have a more rational and consistent treatment of spending on software and its development.

It is anticipated that administrative costs will be limited to \$8.8 million, or an increase of only 6% in 1985-1986. These expenditures are also expected to decrease to 9.5% of total Centre expenditures. By effectively maintaining a low increase in the level of expenditures in this area, the Centre will be able to direct more funds toward the funding of development research activity.

## **Contract research**

IDRC administers research projects on behalf of other donor organizations. Funds for such projects are provided by the donor and are reported in the Centre's financial records when project disbursements occur. Donor funds in excess of recorded expenditures are reported as a liability on the Centre's balance sheet. For the 1984-1985 fiscal year, contract research expenditures totaled \$0.5 million.

## **Equity of Canada**

The equity account increased \$0.1 million to a total of \$8.0 million as at March 31, 1985. Of this amount, \$1.3 million relates to the Cooperative Programs fund.

## **Personnel strength**

At the end of March 1985, the Centre's personnel strength totaled 439 compared with a budget of 466 positions. The personnel strength is expected to remain at 466 in 1985-1986. There will be no increase in positions at head office because of the restraint program.



## Cooperative programs

The grant from the Parliament of Canada includes \$9.1 million for Cooperative Programs to support research collaboration between scientific research groups in developing countries and their counterparts in Canada. This additional grant was accepted on the understanding that the Cooperative Programs were not to divert the Centre from its own objectives, nor involve financial or staff resources beyond grant funds specifically received for such programs.

To comply with these conditions, the Centre has adopted a reporting basis that reflects direct expenditures for Cooperative Programs as well as allocations for Centre support. The amount allocated as part of research operational support, to cover services provided by the IDRC program and administrative divisions participating in Cooperative Programs, has been based on the ratio of Centre program-support costs to direct Centre program research and research related expenditures.

In 1985-1986, Cooperative Programs will receive a Parliamentary grant of \$10.8 million, which is expected to support an appropriation level of \$17.8 million. A complete financial reporting of Cooperative Programs follows. The net revenue balance is available for future cooperative program activities.

	1985	1984
<b>Revenue</b>	<b>\$ 9,100,000</b>	<b>\$ 5,179,782</b>
Grant	9,100,000	5,000,000
Interest	—	179,782
<b>Expenditure</b>	<b>8,754,699</b>	<b>4,334,300</b>
Research and support		
Cooperative Programs Division	3,804,074	2,351,707
Other divisions	4,120,704	1,556,588
Allocated general management	829,921	426,005
<b>Excess of revenue over expenditure</b>	<b>345,301</b>	<b>845,482</b>
<b>Balance from previous year</b>	<b>1,000,118</b>	<b>154,636</b>
<b>Total available funds carried forward to next year</b>	<b>\$ 1,345,419</b>	<b>\$ 1,000,118</b>

*This schedule reflects the policy change effective April 1, 1984, whereby interest income is no longer allocated to the Cooperative Programs.*

## COOPERATIVE PROGRAMS — CENTRE SUMMARY

### SUMMARY OF APPROPRIATIONS (\$000) as at March 31, 1985

	Approved budget 1985-1986	Approved budget 1984-1985	Revised budget 1984-1985	Approved appro- priations	Balance
<b>Cooperative Projects</b>	<b>\$ 14,100</b>	<b>\$ 15,200</b>	<b>\$ 13,780</b>	<b>\$ 13,608</b>	<b>\$ 172</b>
Agriculture, Food and					
Nutrition Sciences	4,000	3,100	3,400	3,352	48
Health Sciences	700	675	230	18	212
Social Sciences	1,300	1,200	1,885	1,900	(15)
Information Sciences	800	500	900	1,267	(367)
Fellowships and Awards	700	450	450	450	—
Communications	100	25	420	404	16
Cooperative Programs	6,500	9,250	6,495	6,217	278
<b>Division Activity Projects</b>	<b>\$ 1,035</b>	<b>\$ 1,235</b>	<b>\$ 963</b>	<b>\$ 923</b>	<b>\$ 40</b>
Agriculture, Food and					
Nutrition Sciences	160	160	160	162	(2)
Health Sciences	65	35	35	29	6
Social Sciences	130	130	130	100	30
Information Sciences	80	80	28	30	(2)
Cooperative Programs	600	830	610	602	8
<b>Technical Support</b>	<b>\$ 1,361</b>	<b>\$ 1,088</b>	<b>\$ 1,088</b>	<b>\$ 1,200</b>	<b>\$ (112)</b>
Cooperative Programs	821	614	614	593	21
Other Divisions (imputed)	540	474	474	607	(133)
<b>Division Management</b>	<b>\$ 506</b>	<b>\$ 539</b>	<b>\$ 539</b>	<b>\$ 582</b>	<b>\$ (43)</b>
Cooperative Programs	406	369	369	355	14
Other Divisions (imputed)	100	170	170	227	(57)
<b>General Management (imputed)</b>	<b>\$ 768</b>	<b>\$ 708</b>	<b>\$ 708</b>	<b>\$ 830</b>	<b>\$ (122)</b>
<b>Totals</b>	<b>\$ 17,770</b>	<b>\$ 18,770</b>	<b>\$ 17,078</b>	<b>\$ 17,143</b>	<b>\$ (65)</b>

# CENTRE TOTALS

## FINANCIAL HIGHLIGHTS (\$000)

	Budget 1985	Actual 1985	% variance from budget	Actual 1984	1984 vs 1985 (% change)
<b>FINANCIAL ACTIVITY</b>					
<b>Revenue</b>	<b>\$ 83,500</b>	<b>\$ 84,164</b>	<b>0.8</b>	<b>\$ 70,039</b>	<b>20.2</b>
Grant from Parliament of Canada	71,900	71,900	—	62,400	15.2
Cooperative Programs	9,100	9,100	—	5,000	82.0
Investment and other income	2,500	3,164	26.6	2,639	19.9
<b>Expenditure</b>	<b>\$ 85,200</b>	<b>\$ 84,055</b>	<b>1.3</b>	<b>\$ 70,174</b>	<b>19.8</b>
Existing projects	34,600	33,690	2.6	29,132	16.0
New projects	23,200	22,933	1.1	18,542	23.1
Regional and liaison offices	4,300	4,456	(3.6)	3,478	28.1
Technical support	11,200	10,676	4.7	8,704	22.7
Division management	4,000	3,997	0.1	3,377	18.4
Administration	7,900	8,303	(5.1)	6,941	19.6
<b>Excess of revenue over expenditure (expenditure over revenue)</b>	<b>\$ (1,700)</b>	<b>\$ 109</b>	<b>106.4</b>	<b>\$ (135)</b>	<b>180.7</b>
<b>PROGRAM ACTIVITY</b>					
<b>Appropriations</b>	<b>\$ 120,000</b>	<b>\$ 102,778</b>	<b>14.4</b>	<b>\$ 93,498</b>	<b>9.9</b>
New projects	92,600	75,346	18.6	70,998	6.1
Regional and liaison offices	4,300	4,456	(3.6)	3,478	28.1
Technical support	11,200	10,676	4.7	8,704	22.7
Division management	4,000	3,997	0.1	3,377	18.4
Administration	7,900	8,303	(5.1)	6,941	19.6
<b>Commitments</b>	<b>\$ 106,900</b>	<b>\$ 105,495</b>	<b>1.3</b>	<b>\$ 88,011</b>	<b>19.9</b>
Projects	79,500	78,063	1.8	65,511	19.2
Regional and liaison offices	4,300	4,456	(3.6)	3,478	28.1
Technical support	11,200	10,676	4.7	8,704	22.7
Division management	4,000	3,997	0.1	3,377	18.4
Administration	7,900	8,303	(5.1)	6,941	19.6

*Above data do not include amounts related to contract research.*

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## CENTRE TOTALS

### FINANCIAL HIGHLIGHTS (\$000)

	Budget 1986	Actual 1985	Actual 1984	Actual 1983	Actual 1982
<b>RESULTS OF OPERATIONS</b>					
<b>Revenue</b>	<b>\$ 88,900</b>	<b>\$ 84,164</b>	<b>\$ 70,039</b>	<b>\$ 62,146</b>	<b>\$ 50,507</b>
Grant from Parliament of Canada	75,200	71,900	62,400	56,700	46,200
Cooperative Programs	10,800	9,100	5,000	2,500	1,000
Investment and other income	2,900	3,164	2,639	2,946	3,307
<b>Expenditure</b>	<b>\$ 92,300</b>	<b>\$ 84,055</b>	<b>\$ 70,174</b>	<b>\$ 59,117</b>	<b>\$ 49,612</b>
Development research	54,200	48,892	41,499	34,662	30,276
Research related activities	7,500	7,731	6,175	5,335	4,134
Research operational support	21,800	19,129	15,559	13,255	10,467
Administration	8,800	8,303	6,941	5,865	4,735
<b>Excess of revenue over expenditure (expenditure over revenue)</b>	<b>\$ (3,400)</b>	<b>\$ 109</b>	<b>\$ (135)</b>	<b>\$ 3,029</b>	<b>\$ 895</b>
<b>PROGRAM ACTIVITY</b>					
<b>Appropriations</b>	<b>\$ 108,800</b>	<b>\$ 102,778</b>	<b>\$ 93,498</b>	<b>\$ 74,395</b>	<b>\$ 60,784</b>
New projects	78,200	75,346	70,998	55,275	45,582
Regional and liaison offices	5,000	4,456	3,478	2,764	2,340
Technical support	12,600	10,676	8,704	7,446	5,787
Division management	4,200	3,997	3,377	3,045	2,340
Administration	8,800	8,303	6,941	5,865	4,735
<b>Commitments</b>	<b>\$ 105,600</b>	<b>\$ 105,495</b>	<b>\$ 88,011</b>	<b>\$ 67,842</b>	<b>\$ 55,216</b>
Projects	75,000	78,063	65,511	48,722	40,014
Regional and liaison offices	5,000	4,456	3,478	2,764	2,340
Technical support	12,600	10,676	8,704	7,446	5,787
Division management	4,200	3,997	3,377	3,045	2,340
Administration	8,800	8,303	6,941	5,865	4,735
<b>Outstanding commitments</b>	<b>\$ 92,800</b>	<b>\$ 79,400</b>	<b>\$ 64,000</b>	<b>\$ 49,100</b>	<b>\$ 41,380</b>

*Above data do not include amounts related to contract research.*

INTERNATIONAL DEVELOPMENT RESEARCH CENTRE  
TOTAL PERSONNEL STRENGTH AND PERSON-YEAR LEVELS AND PROJECTIONS

	Approved 1985-1986		Actual March 31, 1985		Actual March 31, 1984	
	Positions	Person- years	Personnel strength	Person- years	Personnel strength	Person- years
<b>Program divisions</b>	<b>310</b>	<b>309.5</b>	<b>286</b>	<b>287.25</b>	<b>265</b>	<b>264</b>
Agriculture, Food and Nutrition Sciences	53	52.5	51	49.5	43	43.75
Health Sciences	34	34	30	29	23	20.25
Social Sciences	49	49	45	46	47	46.25
Information Sciences	38	38	31	31.75	26	28
Project related staff	42	42	39	43.75	45	46
Cooperative Programs	18	18	17	14	12	10
Office of Planning and Evaluation	10	10	10	10.75	11	11.25
Regional and Liaison Offices	10	10	9	9.25	8	7.75
Fellowships and Awards	11	11	10	10.75	9	9
Communications	45	45	44	42.5	41	41.75
<b>General management</b>	<b>154</b>	<b>154.25</b>	<b>153</b>	<b>153.75</b>	<b>144</b>	<b>138</b>
Executive Office	19	19	20	19.5	18	13
Office of the Secretary and General Counsel	20	19.75	21	20	20	19.25
Office of the Comptroller General and Treasurer	93	93.5	89	93.25	87	87
Human Resources	17	17	18	16.25	15	14.5
Internal Audit	5	5	5	4.75	4	4.25
<b>Secondments</b>	<b>2</b>	<b>2</b>	<b>—</b>	<b>1.25</b>	<b>2</b>	<b>2.25</b>
<b>Sabbatical/study leave provision</b>	<b>—</b>	<b>1</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
<b>Total</b>	<b>466</b>	<b>466.75</b>	<b>439</b>	<b>442.25</b>	<b>411</b>	<b>404.25</b>

Above data exclude employees hired locally by regional offices and project advisers.

## **Responsibility for financial statements**

The financial statements have been prepared by management in accordance with generally accepted accounting principles appropriate in the circumstances. Management also assumes responsibility for all other information in the annual report, which is consistent, where applicable, with that contained in the financial statements. In support of its responsibility, management maintains financial and management control systems and practices to provide reasonable assurance as to the reliability of financial information, and that the assets are safeguarded and the operations are carried out effectively. The Centre has an internal audit department whose functions include reviewing internal controls and their application, on an ongoing basis.

The Board of Governors is responsible for ensuring that management fulfills its responsibilities for financial reporting and internal control. The Board exercises its responsibilities through the Finance and Audit Committee, a majority of whose members are not employees of the Centre. The Committee meets with management, the internal auditors, and the external auditors on a regular basis.

The Auditor General of Canada conducts an independent examination in accordance with generally accepted auditing standards and expresses his opinion on the financial statements. His examination includes a review and evaluation of the Centre's system of internal control and appropriate tests and procedures to enable him to report whether the financial statements are presented fairly. The external auditors have full and free access to the Finance and Audit Committee of the Board.



AUDITOR'S REPORT

To the International Development Research Centre  
and  
The Right Honourable Charles Joseph Clark, P.C., M.P.  
Secretary of State for External Affairs

I have examined the balance sheet of the International Development Research Centre as at March 31, 1985 and the statements of operations, equity of Canada and changes in financial position for the year then ended. My examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as I considered necessary in the circumstances.

In my opinion, these financial statements present fairly the financial position of the Centre as at March 31, 1985 and the results of its operations and the changes in its financial position for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

A handwritten signature in dark ink, appearing to read 'Kenneth M. Dye'.

Kenneth M. Dye, F.C.A.  
Auditor General of Canada

Ottawa, Canada  
June 14, 1985

# INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

## BALANCE SHEET as at March 31, 1985

	1985	1984
<b>ASSETS</b>		
<b>Current</b>		
Cash	\$ 467,781	\$ 292,165
Investments (Note 3)	14,768,861	16,379,708
Accounts receivable	444,586	685,257
Prepaid expenses	827,819	661,244
	<u>16,509,047</u>	<u>18,018,374</u>
Recoverable deposits	435,329	182,806
Property and equipment (Note 4)	3,350,611	3,501,636
	<u>\$ 20,294,987</u>	<u>\$ 21,702,816</u>
<b>LIABILITIES</b>		
<b>Current</b>		
Accounts payable and accrued liabilities (Note 5)	\$ 9,453,247	\$ 10,736,463
Funds provided for contract research	268,100	387,985
Obligation under capital lease	69,903	58,966
	<u>9,791,250</u>	<u>11,183,414</u>
<b>Long-term</b>		
Obligation under capital lease (Note 6)	275,331	345,233
Accrued employee separation benefits	2,199,784	2,255,458
	<u>2,475,115</u>	<u>2,600,691</u>
	<u>12,266,365</u>	<u>13,784,105</u>
<b>EQUITY</b>		
Equity of Canada	8,028,622	7,918,711
	<u>\$ 20,294,987</u>	<u>\$ 21,702,816</u>

Approved:

  
Comptroller General  
and Treasurer

  
President



# INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

## STATEMENT OF OPERATIONS for the year ended March 31, 1985

	1985	1984
<b>EXPENDITURE</b>		
<b>Development research</b>		
Project grants	\$ 42,698,341	\$ 35,028,345
Centre projects	6,192,636	6,470,802
	<u>48,890,977</u>	<u>41,499,147</u>
<b>Research related activities</b>		
Project development and support	4,543,729	3,197,026
Information dissemination	1,975,359	1,839,571
Development research library	1,212,198	1,138,760
	<u>7,731,286</u>	<u>6,175,357</u>
<b>Research operational support</b>		
Technical support	10,675,987	8,704,415
Regional and liaison offices	4,456,076	3,477,706
Division management	3,997,117	3,376,809
	<u>19,129,180</u>	<u>15,558,930</u>
<b>Contract research</b>	<u>494,900</u>	<u>436,935</u>
<b>Total research and support expenditure (Schedule 1)</b>	<u>76,246,343</u>	<u>63,670,369</u>
<b>General management expenditure (Schedule 2)</b>	<u>8,303,128</u>	<u>6,940,920</u>
	<u>84,549,471</u>	<u>70,611,289</u>
<b>REVENUE</b>		
Grant from Parliament of Canada	81,000,000	67,400,000
Investment and other income	3,164,482	2,638,579
Contract research	494,900	436,935
	<u>84,659,382</u>	<u>70,475,514</u>
<b>EXCESS OF REVENUE OVER EXPENDITURE (EXPENDITURE OVER REVENUE)</b>	<u>\$ 109,911</u>	<u>\$ (135,775)</u>

**INTERNATIONAL DEVELOPMENT RESEARCH CENTRE**

**STATEMENT OF EQUITY OF CANADA**  
for the year ended March 31, 1985

	1985	1984
<b>BALANCE AT THE BEGINNING OF THE YEAR</b>	<b>\$ 7,918,711</b>	<b>\$ 8,054,486</b>
Excess of revenue over expenditure (expenditure over revenue)	<u>109,911</u>	<u>(135,775)</u>
<b>BALANCE AT THE END OF THE YEAR</b>	<b><u><u>\$ 8,028,622</u></u></b>	<b><u><u>\$ 7,918,711</u></u></b>

# INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

## STATEMENT OF CHANGES IN FINANCIAL POSITION for the year ended March 31, 1985

	1985	1984
<b>SOURCE OF FUNDS</b>		
Operations		
Excess of revenue over expenditure (expenditure over revenue)	\$ 109,911	\$ (135,775)
Items not affecting funds		
Depreciation and amortization	875,896	645,832
Write-off of systems software	358,378	—
Provision for employee separation benefits	250,893	200,514
(Gain) Loss on disposal of property and equipment	(52,333)	365
	<u>1,542,745</u>	<u>710,936</u>
Proceeds on disposal of property and equipment	83,820	15,099
Increase in current items other than cash and investments	—	2,286,133
Obligation under capital lease	—	366,574
	<u><b>1,626,565</b></u>	<u><b>3,378,742</b></u>
<b>USE OF FUNDS</b>		
Decrease in current items other than cash and investments	1,318,068	—
Additions to property and equipment	1,114,735	1,315,196
Payment of employee separation benefits	306,568	347,993
Increase in recoverable deposits	252,523	29,648
Reduction of obligation under capital lease	69,902	21,341
	<u><b>3,061,796</b></u>	<u><b>1,714,178</b></u>
<b>(DECREASE) INCREASE IN FUNDS</b>	<b>(1,435,231)</b>	<b>1,664,564</b>
<b>FUNDS AT THE BEGINNING OF THE YEAR</b>	<b>16,671,873</b>	<b>15,007,309</b>
<b>FUNDS AT THE END OF THE YEAR</b>	<u><u><b>\$ 15,236,642</b></u></u>	<u><u><b>\$ 16,671,873</b></u></u>
<b>Represented by:</b>		
Cash	\$ 467,781	\$ 292,165
Investments	14,768,861	16,379,708
	<u><u><b>\$ 15,236,642</b></u></u>	<u><u><b>\$ 16,671,873</b></u></u>

## INTERNATIONAL DEVELOPMENT RESEARCH CENTRE

### NOTES TO FINANCIAL STATEMENTS as at March 31, 1985

#### 1. Authority and objective

The International Development Research Centre as a Corporation without share capital was established in 1970 by the Parliament of Canada through the International Development Research Centre Act. The annual grant received from the Parliament of Canada is pursuant to External Affairs Votes 60 and 45 for the years ended March 31, 1985 and 1984 respectively.

The objective of the Centre is to initiate, encourage, support, and conduct research into the problems of the developing regions of the world and into the means for applying and adapting scientific, technical, and other knowledge to the economic and social advancement of those regions.

#### 2. Significant accounting policies

The financial statements have been prepared in accordance with Canadian generally accepted accounting principles and reflect the following policies:

##### Property and equipment

Property and equipment are recorded at cost and depreciated over their estimated useful lives. Leasehold improvements are amortized over the terms of the respective leases. The methods and rates used to provide for the depreciation and amortization of property and equipment are as follows:

	Method	Rate
Computer hardware	Straight line	20%
Leasehold improvements	Straight line	6 $\frac{2}{3}$ –33 $\frac{1}{3}$ %
Office furniture and equipment	Diminishing balance	20%
Vehicles	Diminishing balance	30%
Equipment under capital lease	Straight line	20%

##### Research expenditure

Certain expenditures for development research, research related activities, and contract research are charged to operations when disbursed and as they become due under the terms of contractual agreements. All other research expenditure is recorded on an accrual basis.

##### Contract research

The Centre enters into agreements to undertake contract research on behalf of various donor agencies. The Centre recognizes contract research revenue at the time that the related expenditure is incurred. Funds received in excess of contract research expenditure incurred are reflected in current liabilities.

##### Pension costs

Employees of the Centre are covered by the Public Service Superannuation Plan administered by the Government of Canada. Contributions to the Plan are required from the employees and the Centre. These contributions represent the total liability of the Centre and are recognized in the accounts on a current basis.

### Income taxes

The Centre is exempt from any liability for income taxes.

### Foreign currency translation

Monetary assets and liabilities are translated into Canadian dollars at the rate of exchange in effect at year-end. Non-monetary assets are translated at rates prevailing at the respective transaction dates. Foreign currency transactions are translated into Canadian dollars by the use of an average exchange rate that closely approximates the rate in effect at the transaction date. Exchange gains and losses are included in operations for the current period.

## 3. Investments

Investments consist of short-term notes and deposits and treasury bills held with:

	1985	1984
Canadian chartered banks	\$ 12,194,159	\$ 9,448,940
Governments and governmental enterprises	1,084,412	5,949,218
Commercial enterprises	990,290	981,550
Trust and mortgage companies	500,000	—
	<u>\$ 14,768,861</u>	<u>\$ 16,379,708</u>

## 4. Property and equipment

	1985		1984	
	Cost	Accumulated depreciation and amortization	Net	Net
Computer hardware and systems software	\$ 1,803,714	\$ 719,164	\$ 1,084,550	\$ 1,245,541
Leasehold improvements	1,775,403	1,072,452	702,951	852,480
Office furniture and equipment	1,471,662	707,264	764,398	637,476
Vehicles	684,776	271,272	413,504	328,208
Equipment under capital lease	472,794	87,586	385,208	437,931
	<u>\$ 6,208,349</u>	<u>\$ 2,857,738</u>	<u>\$ 3,350,611</u>	<u>\$ 3,501,636</u>

The Centre has written off prior year software undepreciated costs amounting to \$239,415 and current year software purchases amounting to \$118,963. Future software costs will be expensed when incurred. Depreciation and amortization for the year ended March 31, 1985 amounted to \$875,896 (\$645,832 for 1984).

## 5. Accounts payable and accrued liabilities

	1985	1984
Accrued liabilities — projects	\$ 6,475,773	\$ 7,491,383
Accrued annual and other leave benefits	1,287,894	1,421,118
Other	1,689,580	1,823,962
	<u>\$ 9,453,247</u>	<u>\$ 10,736,463</u>

## 6. Long-term obligation under capital lease

The future minimum lease payments under capital lease are as follows:

Year ending March 31	1985	1984
1985	\$ —	\$ 108,636
1986	108,636	108,636
1987	108,636	108,636
1988	108,636	108,636
1989	108,636	108,636
Total future minimum lease payments	434,544	543,180
Less amount representing interest at 13.5%	89,310	138,981
Present value of the obligation	345,234	404,199
Less current portion	69,903	58,966
	<u>\$ 275,331</u>	<u>\$ 345,233</u>

The obligation under capital lease is recorded at an amount equal to the present value of the minimum lease payments using the interest rate of 13.5% implicit in the lease.

## 7. Operating leases

The Centre has entered into various lease arrangements for office premises, equipment, and staff accommodation, in Canada and in various countries. The total payments under such lease arrangements will be as follows:

Year ending March 31	
1986	\$ 2,733,558
1987	2,048,974
1988	766,965
1989	16,300
Other	—
	<u>\$ 5,565,797</u>

## 8. Contractual commitments — project grants and project development

The Centre is committed to make payments totaling up to \$79,400,000 during the next 4 years subject to funds being provided by Parliament and subject to compliance by recipients with the terms of project agreements. The Centre has also submitted formal grant offers to prospective recipients totaling \$25,300,000 and is awaiting acceptance of these offers.

## 9. Subsequent event

The Budget Papers tabled in the House of Commons by the Minister of Finance on May 23, 1985 provided for the recovery of \$15 million from the Centre in 1985–1986. The Centre is currently discussing this proposed transaction with the Canadian Government.

## 10. Contingencies

The Centre is a defendant in an action for damages and costs allegedly sustained by the plaintiff. Management and counsel are of the opinion that the Centre has defenses against any significant claim and accordingly no provision has been made in the financial statements in respect of this claim.

**INTERNATIONAL DEVELOPMENT RESEARCH CENTRE**  
**SCHEDULE OF RESEARCH AND SUPPORT EXPENDITURE**  
for the year ended March 31, 1985

	1985				1984	
	Development research	Research related activities	Research operational support	Contract research	Total	Total
<b>Programs</b>						
Agriculture, Food and Nutrition Sciences	\$ 16,171,230	\$ 551,041	\$ 3,775,770	\$ 109,590	\$ 20,607,631	\$ 17,852,339
Social Sciences	11,392,867	792,641	3,187,609	74,800	15,447,917	14,286,766
Information Sciences	6,780,358	577,572	2,054,305	—	9,412,235	7,742,052
Health Sciences	6,595,751	424,162	1,884,192	75,848	8,979,953	7,308,020
Fellowships and Awards	3,868,803	134,723	666,848	—	4,670,374	3,631,499
Cooperative Programs	2,356,322	501,457	947,686	—	3,805,465	2,375,303
<b>Program related activities</b>						
Regional, Liaison Offices and Coordination Unit	—	633,699	4,553,863	—	5,187,562	3,965,729
Information Dissemination	359,500	1,975,358	1,500,650	48,527	3,884,035	3,274,622
Special Program Activities	1,339,093	569,012	—	143,229	2,051,334	1,288,851
Development Research Library	—	1,212,198	—	—	1,212,198	1,138,760
External Liaison and Relations	27,053	359,423	558,257	42,906	987,639	806,428
	<b>\$ 48,890,977</b>	<b>\$ 7,731,286</b>	<b>\$ 19,129,180</b>	<b>\$ 494,900</b>	<b>\$ 76,246,343</b>	<b>\$ 63,670,369</b>



## Schedule 2

**INTERNATIONAL DEVELOPMENT RESEARCH CENTRE**  
**SCHEDULE OF GENERAL MANAGEMENT EXPENDITURE**  
**for the year ended March 31, 1985**

	1985	1984
Salaries and benefits	\$ 5,448,313	\$ 4,623,727
Depreciation and amortization	692,153	358,925
Rent and accommodation	615,341	515,448
Office and sundry	473,652	490,853
Travel and relocation	457,114	414,663
Governors' meetings	246,279	171,286
Professional and special services	198,149	203,285
Telecommunications	111,792	123,850
Interest	49,671	23,924
Insurance	10,664	14,959
	<u><u>\$ 8,303,128</u></u>	<u><u>\$ 6,940,920</u></u>

## Fellowships

The general purpose of the Fellowships and Awards Division is to assist in the training and upgrading of the qualifications of individual researchers, managers, and planners in scientific fields related to the broad mandate of IDRC. The Division's program aims at building their research capabilities and, thus, strengthening research institutions in the Third World.

The Fellowships and Awards Division endeavours to meet these objectives by offering various categories of awards, which vary in nature and number, according to changing needs as perceived by the Centre. The program focuses principally on individuals from the least-developed countries and places greater emphasis on professional upgrading than on basic training. Tenure takes place in centres of excellence located, in order of priority, locally, regionally, in Canada, or in another developed country. IDRC-award holders are expected to return to their home country at the end of tenure.

Although the focus is on training and upgrading scientists and professionals from developing countries in fields that parallel the research interests of IDRC, support for Canadian professionals in development-related activities remains an important element of the program and complements the Centre's commitment to place Canadian expertise at the service of the developing countries through cooperative research projects.

The award categories in 1984–1985 were:

- Research fellowships;
- Pearson fellowships;
- Program-related awards;
- Project-related awards;
- Young Canadian researchers.

In addition to the individual awards listed below, the Centre supported the enrollment of 20 young trainees from developing countries at the Hague Academy of International Law.

As well, the Division sponsored 11 group-training programs. These are included in the project summaries on page 35.

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### Research fellowships

The research fellowships have enabled senior researchers from developing countries and Canada to spend up to 12 months producing a work of mutual concern and benefit to IDRC and the fellow. Although fiscal year 1983–1984 was the last year in which the awards were offered, the Fellowships and Awards Division had to respond to previous commitments during the year under review. Consequently, fellowships were granted to three researchers. They are listed in the project summaries on page 36.

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### Pearson fellowships

The Pearson fellowships are named after former Canadian Prime Minister Lester B. Pearson who was Chairman of IDRC's Board of Governors from 1970 until his

death in December 1972. They are offered to young public servants from developing countries who have had at least 3 years' working experience in the service of their government. Candidates are nominated through Canadian missions abroad and IDRC's regional offices. Pearson fellows spend 9–12 months in Canada where they pursue an individual nondegree study program consisting of practical work and academic studies.

During 1984–1985, 12 Pearson fellowships were awarded:

- |  |   |
|--|---|
| <p>Shahida Akhter, Pakistan<br/>Purpose: Agriculture research planning and management<br/>Location: Prairie Region Research Station, Agriculture Canada, Morden, Canada</p> <p>D.H.K.G. Dolamulla, Sri Lanka<br/>Purpose: Policy analysis<br/>Location: Institute of Policy Analysis (Economics and Computer Science), University of Toronto, Toronto, Canada</p> <p>German S. Escorcía, Colombia<br/>Purpose: Fundamentals of communications, information management, and computers<br/>Location: Department of Computer Science, University of Waterloo, Waterloo, Canada</p> <p>Jia Huan-guang, China<br/>Purpose: Postdoctoral studies in epidemiology<br/>Location: School of Medicine, Department of Epidemiology and Community Medicine, University of Ottawa, Ottawa, Canada</p> <p>Pamphile Kantabaze, Burundi<br/>Purpose: Health sciences and community health<br/>Location: Département de médecine sociale et préventive, Université Laval, Québec, Canada</p> <p>Ellard S. Malindi, Malawi<br/>Purpose: Special student attached to the master's in development economics group<br/>Location: Centre for Development Projects, Dalhousie University, Halifax, Canada</p> | <p>Francis Mbeve, Zambia<br/>Purpose: Special student in agricultural economics and extension education<br/>Location: School of Agricultural Economics and Extension Education, University of Guelph, Guelph, Canada</p> <p>Manote Mitrsoomwang, Thailand<br/>Purpose: Information and communication — legal aspects<br/>Location: Department of Communications, University of Montreal, Montreal, Canada</p> <p>C. Orlando Mora, Colombia<br/>Purpose: Planning and management at the senior level in fishery development<br/>Location: Institute of Animal Resource Ecology, University of British Columbia, Vancouver, Canada</p> <p>Dahuku Pere, Togo<br/>Purpose: Planning, changes, and innovations — objectives and evaluation<br/>Location: Faculté des sciences de l'éducation, Université Laval, Québec, Canada</p> <p>Byas J. Poudel, Nepal<br/>Purpose: Studies as a special student with the master's in development economics group<br/>Location: Centre for Development Projects, Dalhousie University, Halifax, Canada</p> <p>Abhijit Sengupta, India<br/>Purpose: Studies as a special student in public administration<br/>Location: School of Public Administration, Carleton University, Ottawa, Canada</p> |
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### Program-related awards

Program-related awards are aimed at increasing the human resource base of Third World research institutions. These awards are intended for researchers as well as administrative and financial personnel. Proposed training programs, generally not exceeding 24 months, must be endorsed by the candidates' institutions and vary from practical attachments to academic studies leading to a degree (graduate studies, preferably at the master's level). Studies may take place in a Third World country or

Canada or, under special circumstances, in a developed country other than Canada. Members of IDRC's regional staff review applications and recommend candidates for awards. After consultation with program staff in Ottawa, final approval is given by the Fellowships and Awards Division. The following people received program-related awards in 1984-1985:

- Tereso A. Abella, Philippines  
 Purpose: Fish genetics training  
 Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Ramon Agbayani, Philippines (SEAFDEC)  
 Purpose: Fifth aquaculture training program for senior aquaculturists leading to a master of science degree  
 Location: Regional Lead Centre, University of Philippines, Visayas, Philippines
- H. Ahsan, Pakistan  
 Purpose: Attend National Aquaculture Centre for Asia - Regional Lead Centre in China training program in integrated fish farming  
 Location: Regional Lead Centre in China, Wuxi, Jiangsu Province, China
- José Fernando Araya Sánchez, Anselmo Castaneda Cowoh, Wilbert Phillips Mora, Herbert Yañez Méndez, Rafael Fajardo King, Phanor Hoyos Garcés, Jorge Pardo Tasies, and Tirso Maldonado Ulloa, CATIE  
 Purpose: Master of science degree in agriculture  
 Location: Centro Agronómico Tropical de Investigación y Enseñanza, Turrialba, Costa Rica
- R.P. Arcilla, Philippines  
 Purpose: Attend National Aquaculture Centre for Asia - Regional Lead Centre in China training program in integrated fish farming  
 Location: Regional Lead Centre in China, Wuxi, Jiangsu Province, China
- L.K.S.W. Balasuriya, Sri Lanka  
 Purpose: Diploma in aquatic pathobiology  
 Location: Institute of Aquaculture, University of Stirling, Stirling, United Kingdom
- Elinor Batezat, Zimbabwe  
 Purpose: Master of arts degree in development studies  
 Location: Institute of Social Studies, The Hague, Netherlands
- Geletu Bejiga, Ethiopia  
 Purpose: Doctoral degree in agricultural sciences  
 Location: International Crops Research Institute for the Semi-Arid Tropics, Agricultural University of Andhra Pradesh, Hyderabad, India
- Cao Xin Guang, China  
 Purpose: International economics law  
 Location: Faculty of Law, Queen's University, Kingston, Canada
- S.K. Chandiwana, Zimbabwe  
 Purpose: Seventh international group training course on components essential for ecologically sound pest and vector management  
 Location: International Centre for Insect Physiology and Ecology, Nairobi, Kenya
- Beatrice Chimwanza, Malawi  
 Purpose: Participate in solar crop-drying workshop  
 Location: Solar Crop Drying Workshop, Nairobi, Kenya
- Chuah Hean Peng, Malaysia  
 Purpose: Fish genetics training  
 Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Chutima Tuntikitti, Thailand  
 Purpose: Training course on fisheries economics  
 Location: Universiti Pertanian Malaysia, Serdang, Selangor, Malaysia
- Carlos Manuel Crespo, Ecuador  
 Purpose: Masters degree in education  
 Location: Universidad Estadual de Campinas, São Paulo, Brazil
- Walter R. da Costa Porto, Brazil  
 Purpose: Integrated management program for foreign managers  
 Location: École nationale d'administration publique, Université de Québec, Ste-Foy, Canada
- Carlos V.D. da Silva, Brazil  
 Purpose: Integrated management program for foreign managers  
 Location: École nationale d'administration publique, Université de Québec, Ste-Foy, Canada
- Suhardjo Danusastro, Indonesia  
 Purpose: Research and development-

- management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia
- Lucas Dharma, Indonesia  
Purpose: Fish genetics training  
Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Papa El Hassan Diop, Sénégal  
Purpose: Master of science degree in clinical veterinary science  
Location: Faculté vétérinaire, Université de Montréal, Saint Hyacinthe, Canada
- Josefina N. Domingo, Philippines  
Purpose: Practical training in research design, structuring data collection and analysis, and basic computer programming  
Location: Department of Social Medicine and Public Health, National University of Singapore, Singapore
- Mercedes L. Espinal, Dominican Republic  
Purpose: Training course on household, gender, and age  
Location: Instituto Universitario de Pesquisas, Rio de Janeiro, Brazil
- Maria L. Fernandes, Cape Verde  
Purpose: Participate in the regional intensive course on demography  
Location: Centro Latinoamericano de Demografía, San José, Costa Rica
- M.W. Girthagama, Sri Lanka  
Purpose: Attend National Aquaculture Centre for Asia – Regional Lead Centre in China training program in integrated fish farming  
Location: Regional Lead Centre in China, Wuxi, Jiangsu Province, China
- Isabel M.C. Guglieomone de Urioste, Bolivia  
Purpose: Doctoral thesis on peasant programs for promotion and education in the Bolivian Antiplano  
Location: Université de Paris VII, Paris, France
- Bambang Guritno, Indonesia  
Purpose: Research and development management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia
- Roman Habtu, Ethiopia  
Purpose: Doctoral dissertation in macro-economics  
Location: University of Massachusetts, Amherst, USA
- Hamrolie, Indonesia  
Purpose: Master of science degree in fisheries economics  
Location: Faculty of Resource Economics and Agribusiness, Universiti Pertanian Malaysia, Serdang, Selangor, Malaysia
- Han Jin, China  
Purpose: Educational planning and administration  
Location: Advanced Training Program, International Institute for Educational Planning, Paris, France
- Hardiman, Indonesia  
Purpose: Research and development-management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia
- Nuhu Hatibu, United Republic of Tanzania  
Purpose: Master of science degree in agricultural engineering  
Location: University of Newcastle-upon-Tyne, Newcastle-upon-Tyne, United Kingdom
- Heng Hock Heang, Singapore  
Purpose: Fish genetics training  
Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Hong Yuping, China  
Purpose: Courses on the Canadian health-care system and health-administration concepts, and courses in English  
Location: University of Ottawa, Ottawa, Canada
- Pamsri Jarimopas, Thailand  
Purpose: Fish genetics training  
Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Rodriguez C. Joaquin, Panama  
Purpose: Course in the design and production of didactic activities using radio, audiovisual, and printed materials  
Location: Acción Cultural Popular, Bogotá, Colombia
- Kamaruzzaman bin Abu Samah, Malaysia  
Purpose: Master of science degree in fisheries economics  
Location: Faculty of Resource Economics and Agribusiness, Universiti Pertanian Malaysia, Serdang, Selangor, Malaysia
- P. Kantamaturapoj, Thailand  
Purpose: Attend National Aquaculture Cen-

- tre for Asia – Regional Lead Centre in China training program in integrated fish farming  
Location: Regional Lead Centre in China, Wuxi, Jiangsu Province, China
- Joseph Karangwa, Rwanda  
Purpose: Field research for a doctoral degree in macroeconomics  
Location: Université Laval, Ste-Foy, Canada
- Naomi B. Katuzi, United Republic of Tanzania  
Purpose: Doctoral degree in curriculum studies  
Location: University of Calgary, Calgary, Canada
- K. Kularatne, Sri Lanka  
Purpose: Attend National Aquaculture Centre for Asia – Regional Lead Centre in China training program in fish genetics training  
Location: Regional Lead Centre in China, Wuxi, Jiangsu Province, China
- Ketut Lana, Indonesia  
Purpose: Research and development-management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia
- Li Hui, China  
Purpose: Fish genetics training  
Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Li Linjia, China  
Purpose: Master of science degree in library science  
Location: Elborne College, University of Western Ontario, London, Canada
- Li Sifa, China  
Purpose: Fish genetics training  
Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Denier St. C. Little, Jamaica  
Purpose: Special training on maritime legislation  
Location: Technical Assistance Group, Commonwealth Secretariat, London, United Kingdom
- Liu Tie-Hu, China  
Purpose: International economics law  
Location: Faculty of Law, Queen's University, Kingston, Canada
- Somsak Luanprida, Thailand  
Purpose: Fish genetics training  
Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Tri S. Martoyuwono, Indonesia  
Purpose: Research and development management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia
- Gervais Mbarga, Cameroon  
Purpose: Master of arts degree in sociology  
Location: Université Laval, Quebec, Canada
- Moses D. Mengu, Ghana  
Purpose: International research and development management  
Location: World Association of Industrial and Technological Research Organizations Secretariat, Stockholm, Sweden
- Miao Wei-Min, China (SEAFDEC)  
Purpose: Fifth aquaculture training program for senior aquaculturists leading to a master of science degree  
Location: Regional Lead Centre, University of the Philippines, Visayas, Philippines
- María del Carmen Midaglia, Uruguay (CIESU)  
Purpose: Master of science degree in sociology  
Location: Instituto Universitario de Pesquisas, Rio de Janeiro, Brazil
- Yunus Mochamad, Indonesia (SEAFDEC)  
Purpose: Fifth aquaculture training program for senior aquaculturists leading to a master of science degree  
Location: Regional Lead Centre, University of the Philippines, Visayas, Philippines
- I. Mudannayake, Sri Lanka  
Purpose: Master of science degree in library sciences  
Location: Institute of Library Science, University of the Philippines, Diliman, Quezon City, Philippines
- S. Mutambu, Zimbabwe  
Purpose: Seventh international group training course on components essential for ecologically sound pest and vector management systems  
Location: International Centre for Insect Physiology and Ecology, Nairobi, Kenya
- E.S.K. Muwanga-Zake, Uganda  
Purpose: Field work for a doctoral degree in agricultural economics  
Location: University of East Anglia, Norwich, United Kingdom

- Thiendou Niang, Sénégal  
Purpose: Information and communication sciences  
Location: Institut national des techniques de la documentation, Conservatoire national des arts et métiers, Paris, France
- I.M. Nitis, Indonesia  
Purpose: Research and development-management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia
- Geoffrey Ochieng-Mbuye, Uganda  
Purpose: Master of science degree in crop production and management  
Location: University of the Philippines, Los Baños, Philippines
- Akinyi W. Oyuko, Kenya  
Purpose: Training in graphics and book production  
Location: International Rice Research Institute, Manila, Philippines
- Paiboon Bunliputaan, Thailand (SEAFDEC)  
Purpose: Fifth aquaculture training program for senior aquaculturists leading to a master of science degree  
Location: Regional Lead Centre, University of the Philippines, Visayas, Philippines
- Jorge B. Papadopoulos, Uruguay (CIESU)  
Purpose: Master of science degree in sociology  
Location: Instituto Universitario de Pesquisas, Rio de Janeiro, Brazil
- Park Chung-Yill, Republic of Korea  
Purpose: Return airfare to Seoul, Korea, after completing diploma course in occupational health at the University of Toronto, Toronto, Canada
- Peng Wei-ping, China  
Purpose: Educational planning and administration  
Location: Advanced Training Program, International Institute for Educational Planning, Paris, France
- Jose D. Peralta, Panama  
Purpose: Course in the design and production of didactic activities using radio, audiovisual, and printed materials  
Location: Acción Cultural Popular, Bogotá, Colombia
- Piyawat Boon-Long, Thailand  
Purpose: Research on passive radiation cooling  
Location: Department of Engineering, University of Reading, Reading, United Kingdom
- Ileda Poemomo, Indonesia  
Purpose: Research and development-management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia
- Ghislaine Poitevien, Haiti  
Purpose: Master of science degree in library sciences  
Location: School of Library and Information Science, University of Western Ontario, London, Canada
- Konda Reddy, Singapore  
Purpose: Fish genetics training  
Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Priscilla Regaspi, Philippines (SEAFDEC)  
Purpose: Fifth aquaculture training program for senior aquaculturists leading to a master of science degree  
Location: Regional Lead Centre, University of Philippines, Visayas, Philippines
- Pascual Remetio, Philippines  
Purpose: Attend National Aquaculture Centre for Asia – Regional Lead Centre in China training program on integrated fish farming  
Location: Regional Lead Centre in China, Wuxi, Jiangsu Province, China
- Fernando da Costa Rodrigues, Angola  
Purpose: Participation in the regional intensive course on demography  
Location: Centro Latinoamericano de Demografía, San José, Costa Rica
- P. Roonpliboolsopit, Thailand  
Purpose: Attend National Aquaculture Centre for Asia – Regional Lead Centre in China training program on integrated fish farming  
Location: Regional Lead Centre in China, Wuxi, Jiangsu Province, China
- Mussi Bin Samingin, Malaysia  
Purpose: Attend National Aquaculture Centre for Asia – Regional Lead Centre in China training program on integrated fish farming  
Location: Regional Lead Centre in China, Wuxi, Jiangsu Province, China
- Sanim Bunasor, Indonesia  
Purpose: Research and data collection for a doctoral degree in forestry economics —



- Assessment of the Indonesian wood-processing industry, technical industry, and economic performance  
Location: University of the Philippines at Los Baños, College, Laguna, Philippines
- Anton Soedjarwo, Indonesia  
Purpose: Research and development-management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia
- Kuntoro Soegiarso, Indonesia  
Purpose: Research and development-management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia
- M.H.W. Soetopo, Indonesia  
Purpose: Research and development-management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia
- Susana E. Sommer, Argentina  
Purpose: Training course on household, gender, and age  
Location: Instituto Universitario de Pesquisas, Rio de Janeiro, Brazil
- Sudarto, Indonesia  
Purpose: Fish genetics training  
Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Sumitr Sutra, Thailand  
Purpose: Training and course work in epidemiology  
Location: International Clinical Epidemiology Program, McMaster University, Hamilton, Canada
- Robinson Tarigan, Indonesia  
Purpose: Research and development-management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia
- Marvin E. Taylor, Costa Rica  
Purpose: Master of arts degree in international affairs — development stream  
Location: Norman Patterson School of International Affairs, Carleton University, Ottawa, Canada
- Gustavo da Gloria Teofilo Pioris, Mozambique  
Purpose: Participation in the regional intensive course on demography  
Location: Centro Latinoamericano de Demografia, San José, Costa Rica
- Matilda A. Thorpe, Gambia  
Purpose: Diploma of higher education  
Location: Loughborough Technical College, Loughborough, United Kingdom
- Supattra Uraiwan, Thailand  
Purpose: Fish genetics training  
Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Mauricio B. Valderrama Barco, Colombia  
Purpose: Course in limnology  
Location: Secretaría de Agricultura y Recursos Hidráulicos, Centro de Estudios Limnológicos, Mexico D.F., Mexico
- Carlos R. Valenzuela, Bolivia  
Purpose: Postgraduate studies (doctoral level) in remote sensing and geographic information systems  
Location: Laboratory for Applications of Remote Sensing, Purdue University, Lafayette, USA
- Pablo Vergara, Panama  
Purpose: Course in small-scale prawn hatchery and nursery operations  
Location: Southeast Asian Fisheries Development Centre, Manila, Philippines
- Upananda Vidanapathirana, Sri Lanka  
Purpose: Doctoral research program on export-led industrialization strategies  
Location: Institute of Development Studies, University of Sussex, Brighton, United Kingdom
- C. Villegas, Philippines  
Purpose: Fish genetics training  
Location: Fish Genetics Training Course, National University of Singapore, Singapore
- Paul K. Wainaina, Kenya  
Purpose: Complete doctoral thesis in philosophy of education  
Location: Department of Educational Foundations, University of Alberta, Edmonton, Canada
- Wang Cui-hau, China  
Purpose: Courses on the Canadian health-care system and health-administration concepts, and courses in English  
Location: University of Ottawa, Ottawa, Canada
- C.F. Watimena, Indonesia  
Purpose: Research and development-management training for researchers

Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia

Widyatmika, Indonesia

Purpose: Research and development-management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia

Dorodjatun K. Yakiti, Indonesia

Purpose: Research and development-management training for researchers

Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia

O. Yambi, United Republic of Tanzania

Purpose: Doctoral studies  
Location: Division of Nutritional Sciences, Cornell University, Ithaca, USA

Zultanawar, Indonesia

Purpose: Research and development-management training for researchers  
Location: Lembaga Ilmu Pengetahuan Indonesia, Jakarta, Selatan, Indonesia

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### Project-related awards

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IDRC's project-related awards are intended for researchers who have been or will be associated with IDRC-supported projects. Training programs vary from short-term courses tailored to the needs of the project, to academic studies leading to a degree (graduate studies, preferably at the master's level). As with the program-related awards, studies may take place in a Third World country or Canada or, under special circumstances, in another developed country. The duration of tenure generally does not exceed 24 months. Program directors recommend candidates for awards and final approval is given by the Fellowships and Awards Division.

Romano Andrade, Costa Rica

Purpose: Master of science in chemistry  
Location: University of Alberta, Edmonton, Canada

Rodrigo F. Cantarero, Nicaragua

Purpose: Special student in economics  
Location: Department of Economics, McGill University, Montreal, Canada

Suleman A. Chambo, United Republic of Tanzania

Purpose: Masters degree in cooperative management  
Location: York University, Downsview, Canada

Malay Chaudhuri, India

Purpose: Techniques of cell culture, methods of handling enteric viruses and techniques of virus concentration from large volumes of treated water  
Location: Department of Microbiology and Immunology, University of Ottawa, Ottawa, Canada

F. Conley, Chile

Purpose: Training in fisheries assessment and enhancement techniques  
Location: Hatfield Consultants Ltd, Vancouver, Canada

Boris Contreras del Rio, Chile

Purpose: Develop and implement a training

and technology transfer program

Location: Hatfield Consultant Ltd, Vancouver, Canada

Souleymane Coulibaly, Ivory Coast

Purpose: Training in documentary methods, scientific information, and application of computer science to those fields  
Location: Université Claude Bernard, Lyon, France

Mathew L.N. Diyamett, United Republic of Tanzania

Purpose: Masters degree in cooperative management  
Location: York University, Downsview, Canada

Fabian A. Ehikhamenor, Nigeria

Purpose: Doctoral degree in library and information sciences  
Location: Drexel University, Philadelphia, USA

Shirley Evelyn, Trinidad and Tobago

Purpose: Training and orientation in information sciences in the United Kingdom, AGRIS (Vienna), and FAO (Rome)  
Location: Association for Information Management, London, United Kingdom

David Nicolas Herrera Pinedo, Bolivia

Purpose: Master of science in forestry engineering

- Location: Universidade Federal do Parana, Curitiba, Brazil
- Andres I. Hohlberg, Chile  
Purpose: Master of science in food sciences  
Location: Department of Food Sciences, University of Guelph, Guelph, Canada
- Ennio G. Innocenti, Chile  
Purpose: Master of science in animal and poultry science  
Location: Animal and Poultry Sciences Department, University of Guelph, Guelph, Canada
- Pato Daniel Kabore, Burkina Faso  
Purpose: Doctoral degree in economics  
Location: Faculté des sciences économiques, Université d'Abidjan, Abidjan, Ivory Coast
- Nzita Kikhela, Zaire  
Purpose: Doctoral degree in demography  
Location: Collège Jacques Leclercq, Département de démographie, Université Catholique de Louvain, Louvain-la-Neuve, Belgium
- P.A. Kowa, United Republic of Tanzania  
Purpose: Master of arts degree in cooperative management  
Location: York University, Downsview, Canada
- John M. Micah, Ghana  
Purpose: Doctoral degree at the University of Cape Coast  
Location: Science Policy Research Unit, University of Sussex, Brighton, United Kingdom
- F.C. Migire, United Republic of Tanzania  
Purpose: Master of arts degree in cooperative management  
Location: York University, Downsview, Canada
- Abdouba Ndongo, Sénégal  
Purpose: Audiovisual techniques  
Location: Institut international de communication, Montreal, Canada
- Antonio B. Omay, Philippines  
Purpose: Attend 15th international course on applied plant breeding  
Location: International Agriculture Centre, Wageningen, Netherlands
- Khasa Phambu, Zaire  
Purpose: Master of science degree in forestry  
Location: Faculté de foresterie et de géodésie, Université Laval, Ste-Foy, Canada
- Morgiana Pinto Bandeira, Brazil  
Purpose: Master of science in rural development  
Location: Universidad Central de Venezuela, Maracay, Venezuela
- Roberto Ramos Diaz, Chile  
Purpose: Polyculture aquaculture systems (shrimp-fish)  
Location: Estación Experimental de Aguas Salobres (Ingeniero Enrique Ensenat), Dirección Nacional de Acuicultura, Panama City, Panama
- Patricia Reyes Marchant, Chile  
Purpose: Develop and implement a training and technology-transfer program  
Location: Hatfield Consultants Ltd, Vancouver, Canada
- Arnoldo Ruiz Valverde, Costa Rica  
Purpose: Doctoral degree in animal and poultry science  
Location: Animal and Poultry Sciences Department, University of Guelph, Guelph, Canada
- A. Lucia Salamea Palacios, Ecuador  
Purpose: Doctoral degree in sociology  
Location: Department of Sociology, University of Manchester, Manchester, United Kingdom
- J.P. Semiono, United Republic of Tanzania  
Purpose: Master of arts degree in cooperative management  
Location: York University, Downsview, Canada
- Susan A. Strasdine, Canada  
Purpose: Master of science in resource management  
Location: University of British Columbia, Vancouver, Canada
- Mutawakila A. Tiarniyu, Nigeria  
Purpose: Master of science degree in library sciences  
Location: University of Western Ontario, London, Canada
- Jorge J. Tomicic, Chile  
Purpose: Master of science in aquaculture  
Location: Southeast Asian Fisheries Development Centre, Iloilo City, Philippines
- Juan Carlos Uribe Barichivich, Chile  
Purpose: Develop and implement a training and technology-transfer program  
Location: Hatfield Consultants Ltd, Vancouver, Canada

Wang Fang-ju, China

Purpose: Master of science degree in regional planning and resource development

Location: Department of Geography, University of Waterloo, Waterloo, Canada

Wang Jinfei, China

Purpose: Master of science degree in geography and remote sensing

Location: Department of Geography, University of Waterloo, Waterloo, Canada

Widharto, Indonesia

Purpose: Master of science degree in library sciences

Location: University of the Philippines, Quezon City, Philippines

Eugenio R. Yokota Bueret, Chile

Purpose: Training in fisheries assessment and enhancement techniques

Location: Hatfield Consultants Ltd, Vancouver, Canada

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### Young Canadian researchers

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Young Canadian researchers are normally doctoral students registered in a Canadian university. The aim of this program is to encourage their involvement in scientific areas of concern to IDRC, and to give them at the same time, exposure to problems of Third World countries. Canadian applicants studying in the following fields are considered: agriculture, food, nutrition, health, information, sociology, policy studies, economics, education, communications, energy, earth sciences, finance, administration, and closely related fields. Students at the master's level may be considered for awards in the fields of health sciences, finance, administration, and communications. Study, placement, and research programs take place in Third World countries, for a period of up to 12 months. Award holders are selected jointly by staff of IDRC's program divisions and the Fellowships and Awards Division.

Michelle M.S. Carr, Canada

Purpose: Field work for doctoral degree in political economy (Urban land policy and the rural poor in Quito, Ecuador) at Facultad Latinoamericana de Ciencias Sociales, Buenos Aires, Argentina  
Department of Political Economy, University of Toronto, Toronto, Canada

Jan E. Conn, Canada

Purpose: Field work for doctoral degree thesis at the Department of Onchocerciasis, Ministry of Health and Social Welfare, Guatemala, and Gorgas Memorial Library, Panama  
Botany Department, University of Toronto, Toronto, Canada

Josée d'Astous, Canada

Purpose: Course in tropical medicine and parasitology at the Institut de médecine tropicale, Anvers, Belgium, and field work in Rwanda  
Département d'anthropologie, Université de Montréal, Montreal, Canada

James M. Farrow, Canada

Purpose: Master of science degree in community health science  
London School of Tropical Medicine, London, United Kingdom

Villia M. Jefremovas, Canada

Purpose: Field research for a doctoral degree in anthropology at the Cordillera Studies Centre, University of the Philippines, Baguio City, Philippines, and the Institut des sciences agronomiques de Rwanda, Rwanda  
Department of Anthropology, University of Toronto, Toronto, Canada

Paul C. Kersey, Canada

Purpose: Field research for doctoral degree thesis (Caciques and socialistas: local level politics and the response to externally-imposed socio-economic change) at El Colegio de Michoacán, Zamora, Michoacan, Mexico  
Department of Anthropology, University of Toronto, Toronto, Canada

David R. Kuhl, Canada

Purpose: Study on the use of fire in Lesotho to identify the major causes of pediatric burns to implement an education program through the Maseru School of Nursing on burns management (MD elective)  
McMaster University, Hamilton, Canada

Jean L. Kuhl, Canada

Purpose: Study on the use of fire in Lesotho to identify the major causes of

- pediatric burns to implement an education program through the Maseru School of Nursing on burns management  
Chedoke – McMaster Hospitals, Hamilton, Canada
- Louise Lahaye, Canada  
Purpose: Field research for a doctoral degree in education in Cotonou, Bénin  
Faculté des sciences de l'éducation, Université de Montréal, Montreal, Canada
- Dana C. Lynge, Canada  
Purpose: Clinical study of infectious diseases at the Ortum Mission Hospital, Kitale, Kenya (MD elective)  
McGill University, Montreal, Canada
- Iain R. McLellan, Canada  
Purpose: Evaluation of the experience of Cameroon, Ivory Coast, Nigeria, and Canada in development-support communications with the goal of aiding the development of nonformal educational television in Cameroon  
École supérieure des sciences et techniques de l'information, Université de Yaoundé, Yaoundé, Cameroon
- Kelly McParland, Canada  
Purpose: Study of official press censorship by comparing the treatment of news in *The Nation*, Nairobi, Kenya, and *The Herald*, Harare, Zimbabwe  
Gemini News Service, London, United Kingdom
- Laurel Waddell, Canada  
Purpose: Study on the use of fire in Lesotho to identify the major causes of pediatric burns to implement an education program through the Maseru School of Nursing on burns management  
Hospital for Sick Children, Toronto, Canada
- Dwight J. Watson, Canada  
Purpose: Field research for a doctoral degree in zoology in fish epigenis at Hasaddin University, Ujung Pandang, South Sulawesi, Indonesia  
Department of Zoology, University of Guelph, Guelph, Canada

## Publications and films

Just as the program activities of the Communications Division are concerned with the dissemination of research results in the Third World, its support function within the Centre is to publish a wide range of scientific and technical publications.

In 1984–1985, the Division published 42 books, covering most of the research areas supported by IDRC's other program divisions. The Division also operates an information program for the Centre to inform special audiences in Canada and abroad about the role of research in development. One of the key components of this program is *The IDRC Reports/Le CRDI Explore/El CIID Informa*, a quarterly magazine published in three separate language editions. It reports on the work of the Centre and provides a forum for discussion of vital development issues. It is supplemented by technical as well as wide-interest films produced within the Division.

A list of publications and films resulting from Centre-supported research follows with the titles in the language of publication. Catalogues of all those issued by the Centre are available on request.

### Centre publications

#### ***IDRC annual report 1983–1984/Rapport***

***annuel CRDI 1983–1984***, Ottawa, Ont., IDRC/CRDI, 1984. 166 p. IDRC-003/84e,f.

***Coming full circle: farmers' participation in the development of technology***, Matlon, P., Cantrell, R., King, D. and Benoit-Cattin, M., ed., Ottawa, Ont., IDRC, 1984. 176 p. IDRC-189e.

***La toxicité du manioc et la thyroïde : recherches et questions de santé publique : compte rendu d'un colloque tenu à Ottawa, Canada, du 31 mai au 2 juin 1982***,

Delange, F. et Ahluwalia, R., réd., Ottawa, Ont., CRDI, 1985. 162 p. IDRC-207f.

***Toxicidad de la yuca y tiroides: aspectos de investigación y salud: trabajos de un seminario celebrado en Ottawa, Canadá, mayo 31–junio 2, 1982***, Delange, F. y Ahluwalia, R., ed., Ottawa, Ont., CIID, 1984. 152 p. IDRC-207s.

***Le logement élémentaire : viabilisation et habitat dans les pays en développement***, Laquian, A.A., Ottawa, Ont., CRDI, 1984. 176 p. IDRC-208f.

***Les contextes de recherche en éducation dans les pays en développement***, Shaeffer, S. et Nkinyangi, J.A., réd., Ottawa, Ont., CRDI, 1984. 290 p. IDRC-213f.

***Crop improvement in Eastern and Southern Africa: research objectives and on-farm testing: a regional workshop held in Nairobi, Kenya, 20–22 July 1983***, Kirkby, R.A., ed., Ottawa, Ont., IDRC, 1984. 122 p. IDRC-218e.

***Social scientists in agricultural research: lessons from the Mantaro Valley Project, Peru***, Horton, D.E., Ottawa, Ont., IDRC, 1984. 67 p. IDRC-219e.

***Spécialistes des sciences sociales et recherche agricole : enseignements du projet de la vallée du Mantaro, Pérou***, Horton, D.E., Ottawa, Ont., CRDI, 1984. 72 p. IDRC-219f.

***Los científicos sociales en la investigación agrícola: lecciones del Proyecto del Valle del Mantaro, Perú***, Horton, D.E., Ottawa, Ont., CIID, 1984. 71 p. IDRC-219s.

***Searching: review of IDRC activities 1983***, Ottawa, Ont., IDRC, 1984. 40 p. IDRC-220c. Chinese translation.

***Tropical root crops: production and uses in Africa: proceedings of the second Triennial Symposium of the International Society for Tropical Root Crops — Africa Branch held in Douala, Cameroon, 14–19 August 1983***, Terry, E.R., Doku, E.V., Arene, O.B. and Mahungu, N.M., ed., Ottawa, Ont., IDRC, 1984. 231 p. IDRC-221e.

**Plantes-racines tropicales : culture et emplois en Afrique : actes du second symposium triennal de la Société internationale pour les plantes-racines tropicales — Direction Afrique, 14-19 août 1983, Douala, Cameroun, Terry, E.R., Doku, E.V., Arene, O.B. et Mahungu, N.M., réd., Ottawa, Ont., CRDI, 1985. 234 p. IDRC-221f.**

**SALUS: low-cost rural health care and health manpower training: an annotated bibliography with special emphasis on developing countries, volume 11, Bechtel, R.M., ed., Ottawa, Ont., IDRC, 1984. 134 p. IDRC-222e.**

**Devindex 1983: index to selected literature on economic and social development/ index d'ouvrages sur le développement économique et social, Ottawa, Ont., IDRC, 1984. 222 p. IDRC-223e,f.**

**Estrategias para el uso de residuos de cosecha en la alimentación animal: memorias de una reunión de trabajo efectuada en el Centro Agronómico Tropical de Investigación y Enseñanza, Turrialba, Costa Rica, 19-21 marzo 1980, Ruiz, M.E., Ruiz, A. y Pezo, D., ed., Ottawa, Ont., CIID, 1984. 159 p. IDRC-224s.**

**SALUS: low-cost rural health care and health manpower training: an annotated bibliography with special emphasis on developing countries, volume 12, Bechtel, R.M., ed., Ottawa, Ont., IDRC, 1984. 137 p. IDRC-225e.**

**Infant mortality and health in Latin America: an annotated bibliography from the 1979-82 literature (includes Spanish, Portuguese, and French entries), Farren, M., compiler, Ottawa, Ont., IDRC, 1984. 172 p. IDRC-226e.**

**SALUS: low-cost rural health care and health manpower training: an annotated bibliography with special emphasis on developing countries, volume 13, Bechtel, R.M., ed., Ottawa, Ont., IDRC, 1984. 140 p. IDRC-227e.**

**SALUS: low-cost rural health care and health manpower training: an annotated bibliography with special emphasis on developing countries, volume 14, Bechtel, R.M., ed., Ottawa, Ont., IDRC, 1984. 143 p. IDRC-228e.**

**SALUS: low-cost rural health care and health manpower training: an annotated bibliography with special emphasis on developing countries, volume 15, Bechtel, R.M.,**

**ed., Ottawa, Ont., IDRC, 1984. 145 p. IDRC-230e.**

**Rural university: learning about education and development, Arbab, F., Ottawa, Ont., IDRC, 1984. 71 p. IDRC-231e.**

**SALUS: low-cost rural health care and health manpower training: a cumulative index to volumes 11-15, Bechtel, R.M., ed., Ottawa, Ont., IDRC, 1984. 97 p. IDRC-232e.**

**Searching: IDRC 1984 — the rural experience, Ottawa, Ont., IDRC, 1985. 40 p. IDRC-235e.**

**Quête d'avenir — CRDI 1984 : l'expérience rurale, Ottawa, Ont., CRDI, 1985. 40 p. IDRC-235f.**

**Proyectos de viviendas urbanas de bajo costo: bibliografía anotada de investigaciones apoyadas por el CIID y el BIRF, Ottawa, Ont., CIID, 1984. 64 p. IDRC-TS41s.**

**Sistemas internacionales de información socioeconómica: estudio evaluativo de los programas tipo DEVSIS, Aiyepèku, W.O., Ottawa, Ont., CIID, 1984. 97 p. IDRC-TS43s.**

**Comunicación entre grupos: el método del cassette-foro, Kaplún, M., Ottawa, Ont., CIID, 1984. 111 p. IDRC-TS45s.**

**Educational research: the English-speaking Caribbean, Miller, E.L., Ottawa, Ont., IDRC, 1984. 199 p. IDRC-TS46e.**

**Rearing of marine fish larvae in Japan, Kuronuma, K. and Fukusho, K., Ottawa, Ont., IDRC, 1984. 109 p. IDRC-TS47e.**

**Improving small-scale food industries in developing countries, Edwardson, W. and MacCormac, C.W., ed., Ottawa, Ont., IDRC, 1984. 167 p. IDRC-TS48e.**

**Tropical timber for building materials in the Andean Group countries of South America, Keenan, F.J. and Tejada, M., Ottawa, Ont., IDRC, 1984. 151 p. IDRC-TS49e.**

**Management of information centres in China: results of a course held in Kunming, Yunnan Province, People's Republic of China, 6-18 December 1982, Broadbent, K.P., ed., Ottawa, Ont., IDRC, 1984. 470 p. IDRC-TS50e.**

**Logical and linguistic problems of social communications with the Aymara people, Guzmán de Rojas, I., Ottawa, Ont., IDRC, 1985. 205 p. IDRC-MR66e.**

**Sorghum and millet improvement in Eastern Africa: proceedings of the second regional workshop on sorghum and millet**



*improvement in Eastern Africa, 21-25 June 1983, Rubona, Rwanda*, Ottawa, Ont., IDRC, 1984. 200 p. IDRC-MR96e.

*Amélioration du sorgho et du mil en Afrique de l'Est : compte rendu du deuxième séminaire régional sur l'amélioration du sorgho et du mil en Afrique de l'Est du 21 au 25 juin 1983, Rubona, Rwanda*, Ottawa, Ont., CRDI, 1984. 212 p. IDRC-MR96f.

*A current awareness bibliography for IDRC-supported fisheries projects, vol. 8, no. 2*, Szpakowska, Z., compiler, Ottawa, Ont., IDRC, 1984. 51 p. IDRC-MR97e,f,s.

*The potential for small-scale milk production in Eastern and Southern Africa: a workshop attended by participants from nine countries in eastern and southern Africa: Botswana, Burundi, Ethiopia, Kenya, Malawi, Swaziland, Tanzania, Zambia and Zimbabwe, 19-21 September 1983, Nairobi, Kenya*, Kategile, J.A., ed., Ottawa, Ont., IDRC, 1984. 123 p. IDRC-MR98e.

*Afforestation research (Tanzania)*, Nshubemuki, L. and Maphole, J.E.N., Ottawa, Ont., IDRC, 1984. 72 p. IDRC-MR99e.

*Étude critique de la recherche sur le développement agricole en Afrique subsaharienne*, Eicher, C.K. et Baker, D.C., Ottawa, Ont., CRDI, 1984. 421 p. IDRC-MR100f.

*De la savane à la forêt : études des migrations des populations du Centre-Bandama*, Asseyipo, H., Koby, A. et Koffi, A., Ottawa, Ont., CRDI, 1984. 222 p. IDRC-MR101f.

*Proceedings of a workshop on hydraulic ram pump (Hydram) technology: held at Arusha, Tanzania, May 29-June 1, 1984*, Schiller, E.J., ed., Ottawa, Ont., IDRC, 1985. 121 p. IDRC-MR102e.

### ***The IDRC Reports/Le CRDI Explore/El CIID Informa***

Published in three separate language editions, *IDRC Reports* is a quarterly magazine of report and comment on the work supported by IDRC and on related activities in the field of international development. Total circulation of the English, French, and Spanish editions is about 23 500 per issue, of which slightly more than 50% is to developing countries, 30% within Canada, and the remainder to other industrialized countries. The magazine is published in January, April, July, and October.

### **Echo**

*Echo*, IDRC's bilingual staff newsletter, aims at informing staff, both at head office and in the regional offices, of Centre issues and events of interest.

### **Films**

*Footholds*, 16 mm, 29 min., documents the plight of the campesinos (the peasant farmers of Latin America) and examines how a network of Latin American research groups is investigating a host of issues and technologies integral to the campesinos' way of life. Farm implements, food, house construction, social organization, and communication are just a few examples of the subjects under study.

### **Publications and texts by Centre staff**

IDRC staff are frequently called upon to participate in workshops and seminars, to speak at conferences, and to contribute to scientific journals. In addition, many of the research projects supported by IDRC generate their own publications — reports, texts, and newsletters — that, although not produced or distributed by the Centre, form an important part of the effort to disseminate research results as widely as possible. The following sections list as many of these documents as were available at the time of publication of this report. Anyone interested in obtaining copies of the documents should contact the normal sources (authors, institutions, libraries, or bookstores), although IDRC will try to supply copies of items not available elsewhere. In case of short supply, preference will be given to researchers in developing countries.

Alvarez, Benjamin. 1984. Ecology, learning and technological development. Paper presented at the 16th Panamerican Congress of Child Development. Washington, May 1984.

1984b. Technological change: its impact in Texas public school budgets. Paper presented at the American Education Finance Association Conference, Orlando, Florida, May 1984.

1984c. Modelos e standards da avaliação na educação de adultos. In *Avaliação em educação de adultos: temas e discussões*. Fundacao Movimento Brasileiro de Alfabetizacao, Unesco, Rio de Janeiro, Brazil.



- Avila, Marcelino. 1984. The farming systems research programme. Department of Research and Specialist Services, Ministry of Agriculture, Harare, Zimbabwe. October 1984.
- Bélisle, François J. 1984a. Tourism and food imports: the case of Jamaica. *Economic Development and Cultural Change*, 32, 819-842.
- 1984b. Notas sobre la articulación entre el turismo y la producción de alimentos en Jamaica. *Revista Geográfica*, 99, 99-107.
- 1984c. Food production and tourism in Jamaica: obstacles to increasing local food supplies to hotels. *The Journal of Developing Areas*, 19(1), 1-20.
- 1984d. The significance and structure of hotel food supply in Jamaica. *Caribbean Geography*, 3, 1-20.
- 1984e. Urban problems, research capacity, and public policy in Latin America. Paper presented at the Association of American Geographers Annual Meeting, Washington, DC, USA, 22-25 April 1984. 10 p. (mimeo).
- 1984f. IDRC's support for development research in Latin America and the Caribbean. Paper presented at the Conference of Latin Americanist Geographers Annual Meeting, Ottawa, Canada, 27-29 September 1984.
- Bélise, François J. and Hoy, Don R. 1984. Tourism impact in Santa Marta, Colombia: a reply to Dann. *Annals of Tourism Research*, 11, 297-298.
- Canon, Carlos and Alvarez, Benjamin, ed. 1985. El sentido de lo humano. Psicología, educación y valores. Biblioteca Internacional, Bogotá, Colombia.
- CRDI. 1984. Sécheresse, famine, aide et développement en Afrique : pour mieux comprendre la sécheresse. CRDI, Ottawa, Ont., Canada. 29 p.
- Croome, G.C.R. and Westley, S.B. 1984. Publication of research results in developing countries: possibilities for assistance. *CBE Views*, 7(3), 6-11.
- Edwardson, William. 1984. El CIID y el apoyo en investigación aplicada sobre problemas de post-cosecha de granos. Mesa Redonda Latinoamericana sobre Post-cosecha de Granos, Viçosa, Brasil, oct. 29-nov. 2, 1984.
- Escobar, Germán. 1984. Economic analysis within the farming systems research and technology development methodology: an empirical application in Central America. Paper presented at the Symposium on Farming Systems Research and Extension: Implementation and Monitoring, 7-10 October 1984, Kansas State University, Manhattan, Kansas.
- Fleury, Jean-Marc. 1984. Notes pour un cours d'introduction au journalisme de vulgarisation scientifique. Présentées au Centre d'études des sciences et techniques de l'information de l'Université de Dakar. 62 p.
- Forget, G., Lacroix, M.J., Calvert, R. and Sirois, P. 1984. The measurement of  $\beta$ -glucuronidase in effluent of perfused alveolar macrophages challenged with chemically modified chrysotile asbestos.
- Gavin, Terry. 1983. MINISIS — A generalized information package. Paper presented to UESIDIC Annual Conference, Nice, 18-20 October, 1983.
- Glover, David. 1984a. Contract farming and smallholder outgrower schemes in less developed countries. *World Development*, 1984 (Nov.-Dec.).
- 1984b. Problems of Canadian development assistance. *Journal of Canadian Studies*, 1984 (Winter).
- 1984c. Sourcing decisions and distribution of risk in the Latin American banana industry. Paper presented at the Conference of Latin Americanist Geographers Annual Meeting, Ottawa, Canada, 27-29 September 1984.
- 1984d. Income distribution and the policy process. Conference on Income Distribution and the Policy Process, Ottawa, October 1984.
- Godfrey, Charles A., Sherwood, Michael and Graham, Garth. 1984. MINISIS/UNIMARC interface — Its impact on libraries. Paper presented at the 50th General Conference of the International Federation of Library Associations and Institutions, Nairobi, 19-25 August 1984.
- Gomes, Melba. 1984. Family size and educational attainment in Kenya. *Population and Development Review*, 10(4).
- Hardie, J.D.M., Chew, Sing C. and Daniels, W.D. 1984. The role of evaluation in

- planning. Paper presented at the 5th Annual Conference of the Canadian Evaluation Society, Ottawa, 2-4 May 1984. 10 p. (mimeo.)
- Head, I.L. 1984a. Notes for remarks to a joint meeting of the Canadian Bar Association and the International Commission of Jurists (Canadian section), Winnipeg, Manitoba, August 1984. IDRC, Ottawa, Ont., Canada. 8 p.
- 1984b. Notes for remarks to the National Defence College, Kingston, Canada, September 10, 1984. IDRC, Ottawa, Ont., Canada. 50 p.
- Hoy, Don R. and Bélisle, François J. 1984. Environmental protection and economic development in Guatemala's Western Highlands. *The Journal of Developing Areas*, 18, 161-176.
- Huggan, Bob. 1985. Science and technology popularization in the Third World — the IDRC experience. Paper presented at Regional Workshop on Role of Mass Media in the Promotion of Science and Technology for Development in Arab Nations, 18-22 February 1985, Cairo, Egypt.
- Hulse, J.H. 1984a. Biotechnology: new horns for an old dilemma. *Food Technology in Australia*, 36(6), 271-277.
- 1984b. Biotechnologies: responsibilities, priorities and constraints. Presented at Inter-Center Seminar on IARCs and Biotechnology, Los Baños, 27 April 1984. IDRC, Ottawa, Ont., Canada. 36 p.
- 1984c. Food and agricultural technology in combating malnutrition. In White, P.L. and Selvey, N., ed., *Malnutrition: determinants and consequences*. Alan R. Liss, New York, NY, USA. 457-469.
- IDRC. 1984. Drought, famine, aid and development in Africa: why Canada should take note. IDRC, Ottawa, Ont., Canada. 26 p.
- Kategile, J., Kirkby, R. and Schmidt O. 1984. Agricultural research project proposal preparation. Paper prepared for Malawian Workshop on Formulation of Research Proposals.
- Kayongo-Male and Kategile, Jackson A. 1984. Quantification of agricultural by-products commonly used in animal feeding. Addis Ababa, Ethiopia.
- Lessard, Gilles. 1984. Contribution de la recherche agricole au développement de l'Afrique. Présenté au Club de Dakar, Montréal, 20 septembre au 4 octobre 1984.
- Mares, Victor, Vera, Raul R. y Li Pun, H.H. 1984. La evaluación de pasturas mediante experimentos de pastoreo y su relación con los sistemas de producción. Presentado en la Reunion de Trabajo de la Red Internacional de Evaluación de Pastos Tropicales, Perú, 1-5 octubre 1984.
- Meehan, Ross. 1985. Report from IDRC. In *Proceedings of the First Asia Foods Conference*. Prayurawong, Bangkok, Thailand. 7-9.
- Morales-Gomez, Daniel A. 1984. Producer cooperatives and worker's participation: the Latin American experience. Prepared for the 14th Annual Conference on Third World Trade Unionism and the New International Division of Labour. University of Ottawa, Canada.
1985. Developing educational research capacity from above: the case of the IFER. Prepared for the workshop on International Cooperation in Educational Development SIDEC Conference. Stanford University, CA, USA.
- Rathgeber, Eva. 1985a. Science and technology policy in Africa: some research issues. In *Proceedings of the Conference of the American Association for the Advancement of Science*, Washington, DC, USA.
- 1985b. The book industry in Africa: 1973-1983 — A decade of development? In Altbach, Philip G. et al., ed., *Publishing in the Third World: Knowledge and Development*. Heinemann Educational Books, Portsmouth, NH, USA.
- 1985c. The project cycle: some thoughts on women and development. In *Women in human settlements: Management for change*. MATCH, Ottawa, Canada.
- 1985d. Research management in African development. Paper presented at the World Bank - Centre for African Studies Consultation, Dalhousie University, Halifax, 28-29 March 1985.
- Rathgeber, Eva, Eisemon, T.O. and Davis, C.H. 1985. Scientific development in Anglophone and Francophone Africa. In *Forje*,

- John W., ed., Mobilizing science and technology for social change and development in Africa. Tycooly Press, London, U.K.
- Sharp, D. 1984a. A handpump program aided by the International Development Research Centre. *Water Quality Bulletin*, 9(4), 185-187.
- 1984b. The IDRC handpump program. Paper presented at the MMBI - World Bank - UNDP Workshop on Handpumps and their application in water supply and sanitation, Changcha, China, 5-21 August 1984.
- Szpakowska, Z. 1984. Bibliografía preliminar sobre la pesca artesanal en América Latina. Paper presented at the Seminario sobre Transferencia de Tecnología y Alternativas de Desarrollo para la Pesca Artesanal. Talcahuano, 7-11 enero 1985. 23 p.
- Tamayo, J.E., Poulter, N.H. and Young, Richard H. 1984. On-board handling and quality changes during storage of fish predominant in Mexican shrimp by-catch. *Journal of Food Technology*, 19, 163-174.
- Toledo, J.M., Li Pun, H.H. and Pizarro, E.A. 1984. The network approach in pasture research: tropical american experience. Paper presented at the Workshop on Pasture Improvement in Eastern and Southern Africa, Harare, Zimbabwe, 17-21 September 1984.
- Valantin, Robert and Balson, David. 1985. The need for informed choice regarding information technologies: case studies in telecommunications. Presented to Advanced Technology Alert System, Bulletin III Review Committee, Rome, 18-20 March 1985.
- Vlassoff, Carol. 1984. A micro-study of culture and fertility in rural Maharashtra. Presented at IUSSP Seminar on Micro-Approaches to Demographic Research, Australian National University, Canberra, September 1984.
- Woolston, J.E. 1984a. Regional integration of information activities: a donor's viewpoint. Presented at Reunión Interamericana de Bibliotecarios y Documentalistas Agrícolas. Brasília, 6-11 mayo 1984. IDRC, Ottawa, Ont., Canada. 16 p.
- 1984b. New technologies and the future development of AGRIS. IDRC, Ottawa, Ont., Canada. 14 p.
- Yeung, Yue-man and Bélisle, François J. 1984. Third World urban development: agency responses with particular reference to IDRC. Paper presented to the International Geographical Union, Working Group on Urbanization in the Developing Countries, Lille, France, 21-24 August 1984. 30 p. (mimeo).
- Zandstra, Hubert G. 1985. The design and testing of improved livestock technology for mixed farms. Discussion paper prepared for the Network workshop number 1 on Animal Traction in a Farming Systems Perspective. Lama, Kara. Togo, March 4-8, 1985.

## Publications/Research supported by IDRC

### Periodicals

- Abstracts on cassava.* Centro Internacional de Agricultura Tropical (CIAT). Centro de Información sobre Yuca, Apartado Aéreo 67-13, Cali, Colombia.
- Abstracts on field beans.* Centro Internacional de Agricultura Tropical, Communications and Support Unit, Apartado Aéreo 67-13, Cali, Colombia.
- ACT bulletin: Agricultural Information System, Dominica.* Association for Caribbean Transformation, Port-of-Spain, Trinidad and Tobago.
- AGE current awareness service.* Asian Information Center for Geotechnical Engineering, Asian Institute of Technology, P.O. Box 2754, Bangkok, Thailand.
- AGE news: a quarterly publication of the Asian Information Center for Geotechnical Engineering.* Asian Information Center for Geotechnical Engineering, Asian Institute of Technology, P.O. Box 2754, Bangkok, Thailand.
- Agriasia: a current bibliography of Southeast Asian agricultural literature.* Southeast Asian Regional Center for Graduate Study and Research in Agriculture, Agricultural Information Bank for Asia, College, Laguna 3720, Philippines.

- APROSC newsletter*. Agricultural Projects Services Centre, Agricultural Documentation Centre, P.O. Box 1440, Kathmandu, Nepal.
- Asian geotechnical engineering abstracts*. Asian Information Center for Geotechnical Engineering, Asian Institute of Technology, P.O. Box 2754, Bangkok, Thailand.
- Bannanukrom tangkankaset (Agricultural bibliography)*. Samnahawsmut Mahavithayalai Kasetsart (Kasetsart University Library), Bangkok 10900, Thailand.
- Bibliography on bean research in Africa*. Centro Internacional de Agricultura Tropical, Apartado Aéreo 67-13, Cali, Colombia.
- Boletín de alerta*. Centro de Documentación, Centro Latinoamericano de Administración para el Desarrollo, Calle Maury No. 8, Las Mercedes, Sector Los Naranjos, Caracas 1060, Apartado 4181, Caracas 1010-A, Venezuela.
- Boletín de resúmenes*. Centro de Documentación, Centro Latinoamericano de Administración para el Desarrollo, Calle Maury No. 8, Las Mercedes, Sector Los Naranjos, Caracas 1060, Apartado 4181, Caracas 1010-A, Venezuela.
- Buffalo bulletin*. International Buffalo Information Center, Kasetsart University Library, Bangkok 10900, Thailand.
- Bulletin du CIPEA*. Centre international pour l'élevage en Afrique, Service des Publications, B.P. 5689, Addis-Abeba, Éthiopie.
- Canadian Association of African Studies Newsletter/Association canadienne des études africaines bulletin*. Canadian Association of African Studies. Department of Geography, Carleton University, Ottawa, Ont., K1S 5B6 Canada.
- CARISPLAN abstracts*. Economic Commission for Latin America, Office for the Caribbean, Caribbean Documentation Centre, P.O. Box 1113, Port of Spain, Trinidad.
- COCONIS newsletter*. Coconut Information Centre, Coconut Research Institute, Lunuwila, Sri Lanka.
- Coupeas: abstracts of world literature*. International Grain Legume Information Centre, International Institute of Tropical Agriculture, P.M.B. 5320, Ibadan, Nigeria.
- Current awareness*. International Center for Agricultural Research in the Dry Areas, P.O. Box 5466, Aleppo, Syria.
- Date palm journal*. FAO Regional Project for Palm and Dates Research Centre in the Near East and North Africa, P.O. Box 10085 Karradah Al-Sharkiyah, Baghdad, Iraq.
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