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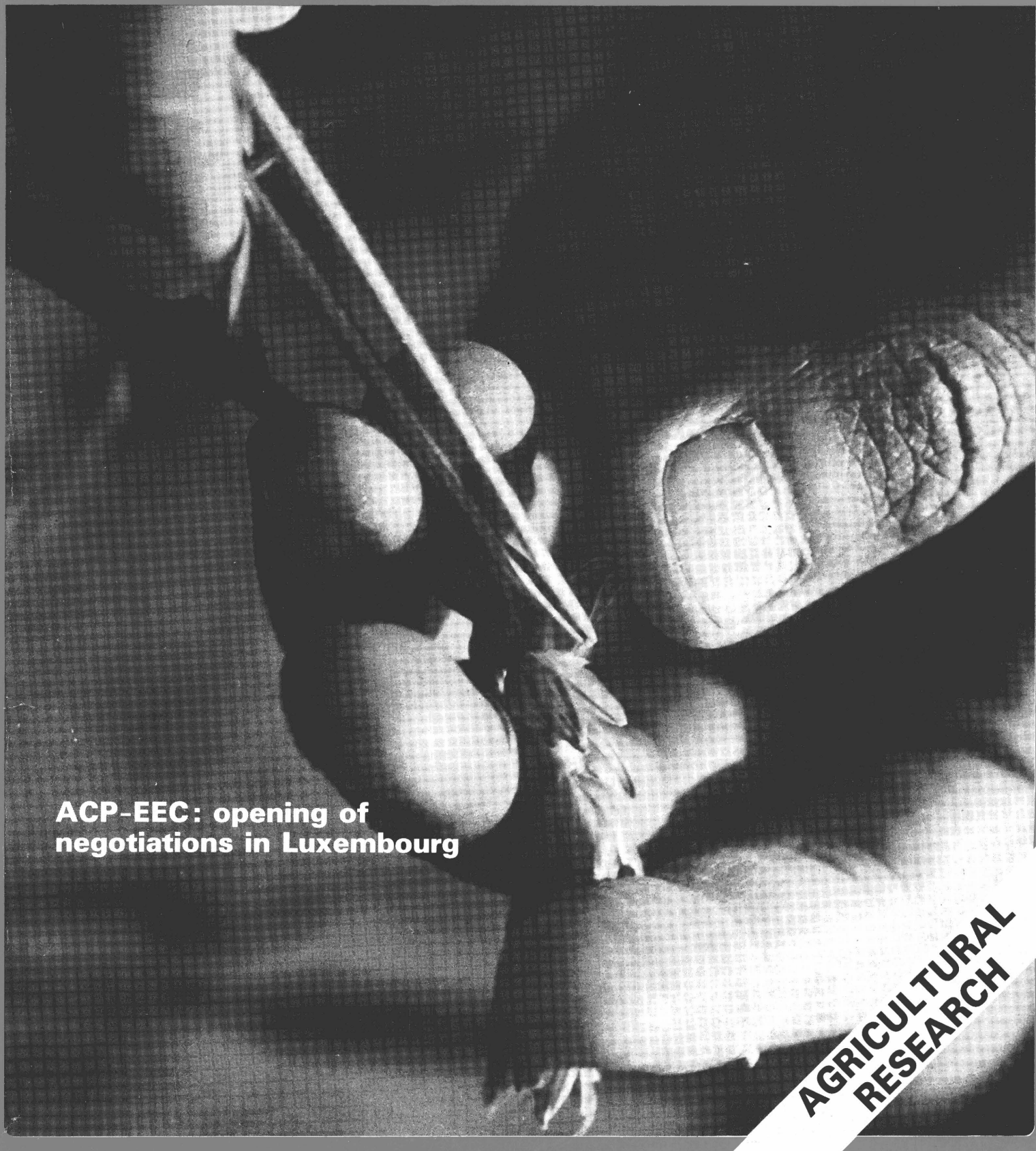

ACP-EEC: opening of negotiations in Luxembourg

AGRICULTURAL RESEARCH

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FRANCE

(Overseas departments)

Guadeloupe
Guiana
Martinique
Reunion
St Pierre and Miquelon

(Overseas territories)

Mayotte
New Caledonia and dependencies
French Polynesia
French Southern and Antarctic Territories
Wallis and Futuna Islands

NETHERLANDS

(Overseas countries)

Netherlands Antilles
(Aruba, Bonaire, Curaçao, St Martin, Saba, St Eustatius)

UNITED KINGDOM

(Overseas countries and territories)

Anguilla
British Antarctic Territory
British Indian Ocean Territory
British Virgin Islands
Brunei
Cayman Islands
Falkland Islands and dependencies
Montserrat
Pitcairn Island
St Helena and dependencies
Turks and Caicos Islands

This list does not prejudice the status of these countries and territories now or in the future.

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Cover: *Artificial insemination of seeds at the Information Centre for Agricultural Seeds in the Netherlands (photo FAO)*

ACP-EEC — A viewpoint on the negotiations

Josua Cavalevu, Fijian Ambassador and current Chairman of the ACP Committee of Ambassadors underlines the "short comings" of Lomé and hopes for "greater understanding" between the partners.
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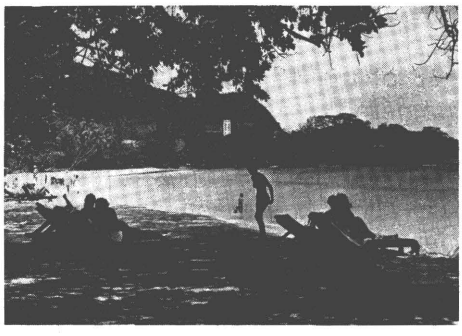
ACP — Seychelles



Ninety-two islands scattered over a million square kilometres in the Indian Ocean. With a slump in the tourism industry, the Seychelles turn to a more diversified approach to development.
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• Tanzania: An interview with President Nyerere

The Tanzanian Head of State is "one of the most prominent figures in African nationalism" and a man of international renown. How does he see his country's problems and those of the world?
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EUROPE — Interact Group

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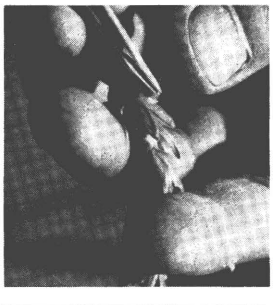

DOSSIER:

Agricultural Research

"It is shortsighted, even blind, to have development without research" (Edgard Pisani). A means of solving the hunger problem?
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The Courier

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"The sleep merchants"

The summer months are traditionally a time for the international organizations to shower their public with reports. A comparison between them is always interesting, particularly this year in view of the marked convergences. The latest arrival, the GATT annual report, which is always a mine of information, gives a graphic account of the present crisis, pointing out that world trade in 1982 dropped by 2 % in volume and 6 % in value, the worst results since the end of World War II. And what are the prospects for recovery? They are compromised, the report says, by the excessive debts of some of the developing countries, particularly those in Latin America. This will come as no surprise to our readers. Delfim Neto, the Brazilian Minister of Planning, brought a smile to people's faces at the recent Caracas conference when he was asked whether his country's debts kept him awake at night. "I sleep perfectly well", he was reported to have said, "it's the creditors who lie awake worrying". This may or may not be true, but it is certainly indicative of a particular state of mind.

Another annual report that finds its way to office desks during the summer and which completes the former is the World Bank report. This year, it underlines the fact that high interest rates and declining export earnings have forced more than 20 developing countries to renegotiate their debts since the beginning of 1982. "The ratio of debt service to export receipts (including services) for all developing countries increased from 13.6 % in 1980 to 20.7 % in 1982" and countries, particularly those in Africa, whose economies depend on the production of raw materials, have had the biggest problems, as most commodity prices in general slumped again last year, after their big fall in 1981. As a result of all this, *per capita* income has dropped. Another interesting point in this report is that the developing countries' share of the industrialized countries' exports went up from the 23 % mark of 1973 to 28 %—yet another reminder that any lasting economic expansion depends to a fairly large extent on economic activity in the Third World, which is not as yet very industrialized. The United Nations Industrial Development Organization (UNIDO) recently announced that Africa's share, according to 1982 estimates, was only 1.11 % of this figure.

Lastly, the FAO, which ran a one-day world food session on the quest for secure food supplies, suggests that Africa is no better off either when it comes to food production. This continent, with its population of almost 500 million, currently has nearly 80 million undernourished people. The FAO bulletin on food prospects expects *per capita* cereal consumption in Africa to drop further by something like 4 % below the level of three years ago. Overall, *per capita* food production in Africa has dropped in 23 of the 42 countries for which the FAO has gathered statistics—and this, of course, at a time when the slump in the world prices of the main export products is creating enormous financial strain and drastically reducing import possibilities.

So, in almost every sector, the situation of Africa, where the majority of the ACP people live, is disquieting. It tends to deteriorate. The ACP countries of the Caribbean and the Pacific have not been spared by the crisis either. They too have their problems. And this is the very difficult setting in which the 63 ACP countries have to start negotiations for a new Convention with the ten members of the European Community. The Ten too have their problems, as an expert report to the European Parliament by Michel Albert (France) and James Ball (UK) has just shown in no uncertain terms (1). These problems are those of decline. In the "Community of every man for himself", the future was mortgaged for the present and the Europe that is now marking time looks as though it will miss out on the third industrial revolution, that of high technology.

All this will weigh very heavy on the negotiations for a new Convention that have just begun. For a whole year, those who attend the talks in order to succeed will have to wage a daily war against the "sleep merchants" (to quote French philosopher Emile Chartier, better known as Alain), those people who have no creative imagination or resistance to national egoism and parochial interests and who are sometimes seduced by the dogma and all-too reassuring ease of routine. ACP-EEC cooperation, which must be pursued and expanded, is both a great challenge and a great design, begun 20 years ago and, in spite of its shortcomings, there is nothing comparable in the world today. o

ALAIN LACROIX

(1) See "Europe" book reviews: "Un pari pour l'Europe" (A bet for Europe) by Michel Albert.

"The ACP states do not wish to remain always dependent"

Ambassador Cavalevu of Fiji

Ambassador Josua D.V. Cavalevu of Fiji, Chairman of the ACP Committee of Ambassadors underlines some major shortcomings in the Lomé Convention and calls "for a greater understanding" by the EEC of the ACP economic and cultural needs in order to improve ACP-EEC future cooperation. This interview was conducted before the meeting of the Joint Committee of the ACP-EEC Consultative Assembly in Berlin on 19-23 September (See yellow pages).

▶ *In your report to the Kingston joint Committee meeting you presented various observations and reservations about the way Lome II has been implemented. With the negotiations for a new ACP-EEC agreement currently taking place, how do you see a Convention which would correspond to the kind of advances put forward in your report?*

— A Convention like Lomé which is jointly negotiated, jointly agreed and jointly signed by two contracting parties should be jointly managed, with decisions taken jointly at all levels if it is to fully satisfy the aspirations of both partners. In practice however there have been problems relating to the manner in which the Lomé Convention has been implemented. There is really no transparent joint ACP-EEC interpretation of the texts whenever problems arise. Neither there is a clear understanding by the ACP Group of how the resources are managed and allocated until after some of the events have taken place. Neither has there been any agreement by the Community for the ACP Group to be a real partner in the allocation of EDF resources where relevant. Even in the negotiation of the Convention, the Community decides purely unilaterally what quantum of resources will be made available.

In 1982 levies were imposed upon ACP products which were supposed to have entered the Community market free of customs duties. There would have been greater understanding and no frustration had the Community taken the trouble to consult the ACP Group in jointly interpreting the relevant texts rather than taking unilateral action which created unnecessary controversy.

Photo MAPEZ – Waterloo

Josua D.V. Cavalevu

There have been instances when the ACP Group finds that the European Development Fund has been used to finance seminars initiated and organized by European firms in Europe on matters relating to ACP interests; in these the ACP Group were never involved from the start but were only invited to participate at the eleventh hour. So it appeared that the Group was only used eventually to justify expenditure of EDF. On regional projects, it is still the European Community in Europe which eventually decides unilaterally whether the projects in the ACP regions qualify as regional projects or not.

"A greater degree of authority and decision-making can be delegated and decentralized to the regions and capitals of ACP States"

This system of administration delays implementation, erodes the real value of the resources allocated and questions the credibility of a Convention jointly signed by independent States.

I would therefore wish to see in the next Convention firstly a more simplified, clearly articulated set of objectives, principles and provisions which allow eventually for joint interpretation of texts if there are problems relating to implementation. Secondly the ACP Group should be clearly seen to be involved at a political level in decisions on the allocation of EDF resources, for example in the financial and technical cooperation programme. Thirdly I hope that a greater degree of authority and decision-making can be delegated and decentralized lower down the line to the regions and capitals of ACP states. This will give a greater feeling of involvement, participation, pride and independence by ACP states. The provisions of the Convention should be also adequately flexible not to tie the hands of the managers yet reasonably clear so as to ensure adequate monitoring and accountability by the European Community.

▶ *You also said the Community must play its full part to ensure that the Lomé Convention is seen to practice what it preaches. Don't you think the Community's attitude sometimes might also reflect certain weaknesses of the ACP's approach to cooperation?*

— Through the Lomé Convention, the European Community, a group of powerful, industrialized countries, has committed itself in practice to a unique, unequalled and unparalleled model of relation with a very large group of developing states and this is compatible with the aspirations of the international community in creating a new, more just and more balanced international economic order. In doing this it has put into practice what other, perhaps even more powerful, industrialized individual or groupings of countries have merely verbalized but never seem to have the political will to materialize.

Having committed itself to such an association with the ACP Group the Community, being a stronger economic partner, should in my view ensure that the contractual agreement, despite all else, is seen to work as a real example of equality and partnership. This means that the Community is in a position to encourage both parties to cultivate the kind of mutual relations which ensure that all necessary material and spiritual resources are mobilized jointly for mutual benefit.

For instance, the Community, I believe, can be more forthcoming in genuinely seeking to understand the real worries and fears of the ACP Group, by helping devise a Convention aimed at helping ACP states define their development problems and achieve economic independence by doing something about it.

It does seem to me that the Lomé Convention is restrictive if not conflicting in some of its principles in the sense that while it refers to "complete equality between partners", "mutual interest", "cooperation", the "spirit of solidarity" and "friendly relations" it gravely omits the fundamental principle of promoting greater understanding of each other as partners. I say that because I do not see how any set of partners can really coo-

perate and mutually benefit without "understanding" of each other. After all the Lomé Convention is not a purely legal instrument; it is an agreement among people for the benefit of people. Our unique model of association must be founded on human understanding first of all.

Having said that I do agree and often feel that this spirit of understanding is somewhat lacking on both sides of the ACP-EEC partnership and is often complicated because the Convention is drafted and implemented in restrictive technical legal terms, which tend to bind rather than facilitate human action for development. The European Community having taken such an examplary lead internationally is in a position to create the kind of environment which can liberate the best of human potential in some of the most needy areas of development in the world.

▶ *To take an example: you said in your report that power is still in the hands of the Community member states. Technically, objectively, what have you done to obtain this power and to assume it?*

— It is true that the authority underlying the implementation of the Convention eventually lies in the hands of the Community which, because it controls the "purse strings", feels that its own interpretation should be accepted as final and the ACP is quite powerless to change this situation unless it is invited to do so by its European partner.

Take, for instance, the question of the negotiation of the price of ACP sugar. There have been neither any real negotiations of the price, nor has the Community been seen by the ACP Group to take any step to ensure that the sugar price is negotiated as required by the Protocol. The Community can apply safeguard clauses to protect sensitive industries such as textile industries or any other sensitive imports. In these instances there seems to be nothing which the ACP Group can do to change the position unless, as I have already said, there is that understanding by the European Community to help the development of the ACP States.

Finally, in reply to your question, the ACP Group is not interested in obtaining any power or to assume any. All that it is pleading for is to be given an opportunity to be recognized and assisted to develop its resources through its own effort. After all, political independence for many of our countries does not mean assuming power. For many of us independence means self-respect through self-effort for self-sufficiency.

This is what we need with the Community's help.

▶ *A number of the main provisions, or the way they were finally formulated in the different ACP-EEC cooperation agreements, came from the European partners. Do you think too much emphasis has been put on such provisions, rather than on the development objectives that finally determine the appropriate means?*

— Since I was not involved in the negotiations for Lomé II, I find it quite difficult to respond to your first part of the question because I really do not know the facts. However if what you are stating is correct, one can only hope that the next Convention will be negotiated with both partners looking "outward", and be prepared to "go forward", because if parties to the Convention choose to adopt an "inward looking" stance, it will only inevitably take things "backward" and lead everyone further "downward".

M. Pisani's document "Was a positive step in the right direction"

We all acknowledge that the times are hard and there does not seem to be any indication of immediate relief but the cost of letting another opportunity provided though the Third ACP-EEC Convention slip by will be already too heavy for too many countries to bear. So we can only all hope that in spite of the difficulties faced by developing countries across the table in UNCTAD VI, the European Community in negotiating the Third ACP-EEC Convention with our states will take the lead, stand up and be counted internationally and confirm that because of ACP-EEC interdependence the recovery of Europe seriously depends upon the recovery of the ACP states. For trade figures alone show that the real financial benefit of the cooperation between ACP and EEC is heavily weighted in favour of the Community.

▶ *Undefined policies are one of the shortcomings described in your report. Does this also apply to the ACP states? Aren't the ACP countries concerned in the definition of the policies?*

— My reference to the problem of undefined policies applies to both the ACP and EEC. For the European Community it took a man of vision and courage like the Commissioner for Development, Mr E. Pisani, to define in writing the Community's basic orientation to development of Third World countries, including the ACP Countries. And although the Commissioner's entire submission may have not been fully clear to all or accepted in its entirety, it was a positive step in the right direction — an important political declaration in the preparation for the forthcoming negotiation of the Third ACP-EEC Convention.

The ACP Group, on its part, is also developing a document defining its basic objectives and policies.

The whole exercise is very difficult since the Convention embraces and in the end must satisfy the aspirations of a very wide range of ethnic, cultural and philosophical groupings from diverse geographic regions of the world at different levels of development and development perspectives.

But at least it is most heartening to see how, since the Jamaica meeting of the Joint Committee, a very definite move has been made by each side to clarify some of the basic questions relating to the objectives, principles and policies of development cooperation between the partners of Lomé.

It only remains for all of us to hope that during the negotiations there will be that fount of mutual goodwill that will enable both sides to look forward, seeking actively and working persistently to understand each others' problems, define common needs, objectives, and formulate appropriate policies which will advance the cause of our ACP-EEC cooperation.

▶ *Intra-ACP cooperation is still more an idea than a fact. To what extent can the next ACP-EEC convention help define its objectives and get concrete results?*

— The only real way to achieve concrete results in the development of ACP states in the next ACP-EEC Convention begins with the preparedness of the European Community to listen to the development aspirations of the ACP states and help these states achieve their development objectives at national and regional levels.

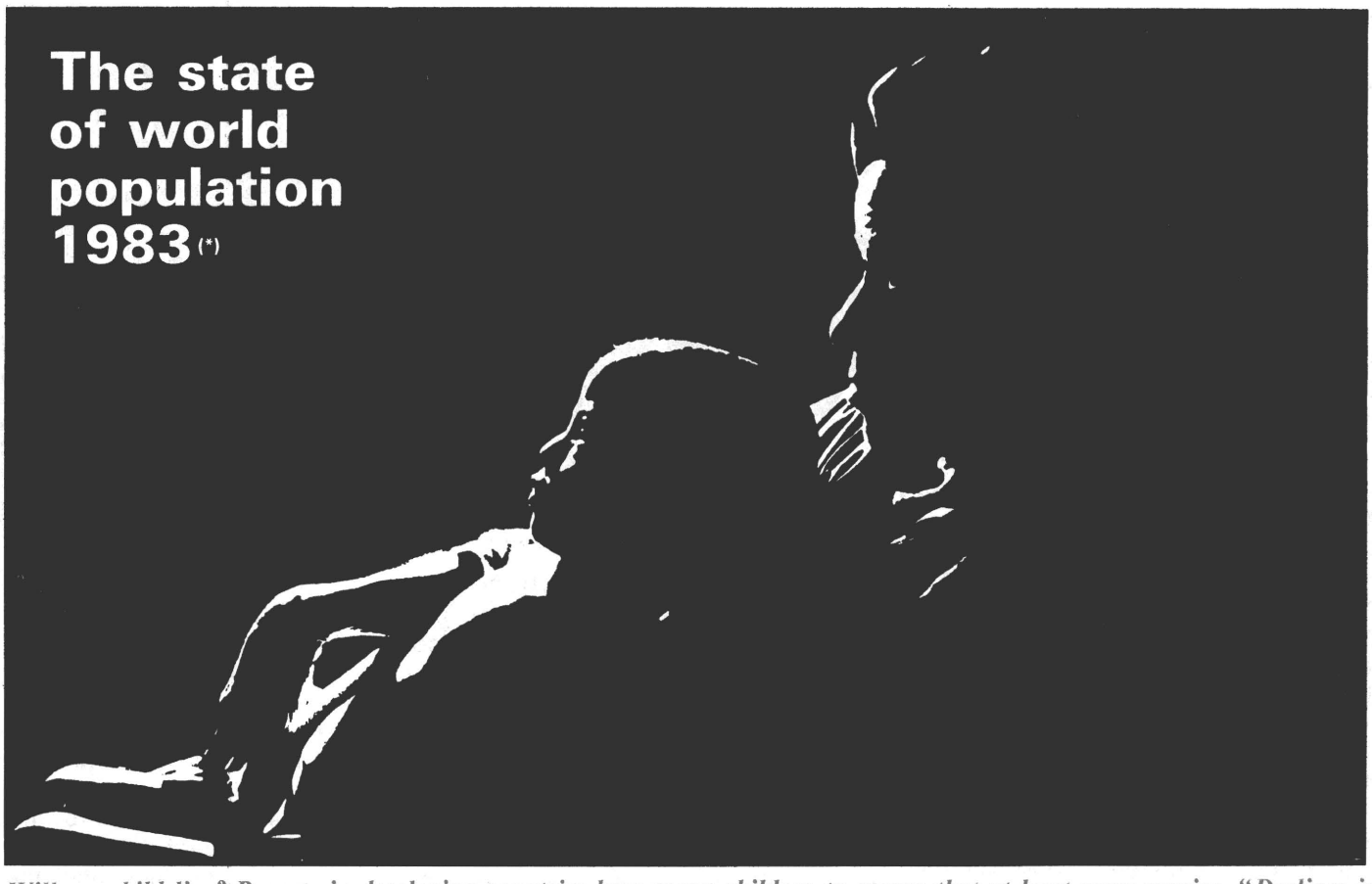
The ACP states do not wish to remain always dependent upon the industrialized countries; they aspire to achieve a greater degree of economic independence through their own efforts, using their own human and available natural resources.

However the ACP states realise that in the cash economy of a highly technological world which is quite different from their own traditional way of life they have no choice but to continue to work in economic cooperation with the industrialized countries until they themselves reach a certain degree of their own authentic version of development.

The industrialized countries and the ACP states know that they are very interdependent on each other. So the best way to achieve concrete results is to cooperate with each other in a true spirit of partnership ensuring that benefits are more equitable. The ACP states need the help of Europe to achieve this for they cannot do it in isolation. o

Interview by
LUCIEN PAGNI

The state of world population 1983 (*)



FNUAP

Will my child live? Parents in developing countries have many children to ensure that at least some survive. "Declines in infant mortality," says the 1983 State of World Population Report, "are essential for lower birth rates."

Parents in developing countries are having smaller families—but there is a long way to go before world population growth stops, says the 1983 State of World Population Report from the United Nations Fund for Population Activities.

A Third World woman now has around five children on average compared with an average of two for women in the developed countries. World population will only stop growing in the future, says the report, when family sizes are reduced to levels similar to those in the industrialized countries today.

The family of the future

There are hopeful signs that this might happen; family sizes have been shrinking. And, if the present rate of progress is maintained, world population will finally stop growing in the year 2095 by which time there will be 10 200 m people.

The big question for 1984, says the report, will be how to sustain that downward trend in population growth—a question which the international conference on population to be held next year in Mexico will face.

High on the conference agenda will be infant mortality—a subject intimately linked with birth rates because parents often want large families when they believe that some of their children will die.

The 1983 report also details the considerable progress that has been made in this area. Infant mortality in the developing countries fell in the thirty years up to 1980, from 164 deaths per thousand live births to around 100. And today the average is about 90.

But this average disguises some areas of failure; there are still countries where the figure is as high as 150. The World Population Plan of Action adopted at the last international population conference in 1974 recommended that the rate in such countries be reduced to 120 by 1985. But, according to the 1983 report, there is "little chance of achieving these hopes if present trends continue". The report also points out that, for the developing world in general, the rate of decline in infant mortality slowed during the 1970s—a matter that will be of great concern to next year's conference.

As well as detailing actual family sizes, the report also looks at "desired family size". In a survey of 20 developing countries this turned out to be between three and five children, on average. So it appears that, on average, parents in many countries are having one or two more children than they really want—a strong indication of the unsatisfied need for family planning.

The report makes three recommendations. First, that infant mortality be further reduced. Second, that

(*) Source: United Nations Fund for Population Activities.

all couples should have access to family planning information and services. Third, that the idea of a small family should be promoted—though always in accordance with cultural and religious practices.

The prospects of feeding

The report goes on to look at the prospects of feeding the world's future population. It warns that, although there may be enough food in the world as a whole—and even an improvement in the situation by the year 2000—there is cause for serious concern in the cases of individual nations.

A new joint study by UNFPA and the Food and Agriculture Organization of the United Nations has examined food production potential in 117 developing countries. It concludes that in the year 2000 there would be 65 countries unable to feed their populations from their own lands at low levels of agricultural input. Taken together these countries would have 441 million people in excess of their food production capacity. Even with high levels of such inputs as fertilizers and pesticides, there would be 19 countries in the year 2000 where local production would not be sufficient to meet demand.

And this only takes into account a 6 500 m world population in the year 2000. Given that world population will not stabilize before it reaches 10 200 m, "the implications for food supply," says the report, "can be imagined".

Population movements: drift to the cities and migrant workers

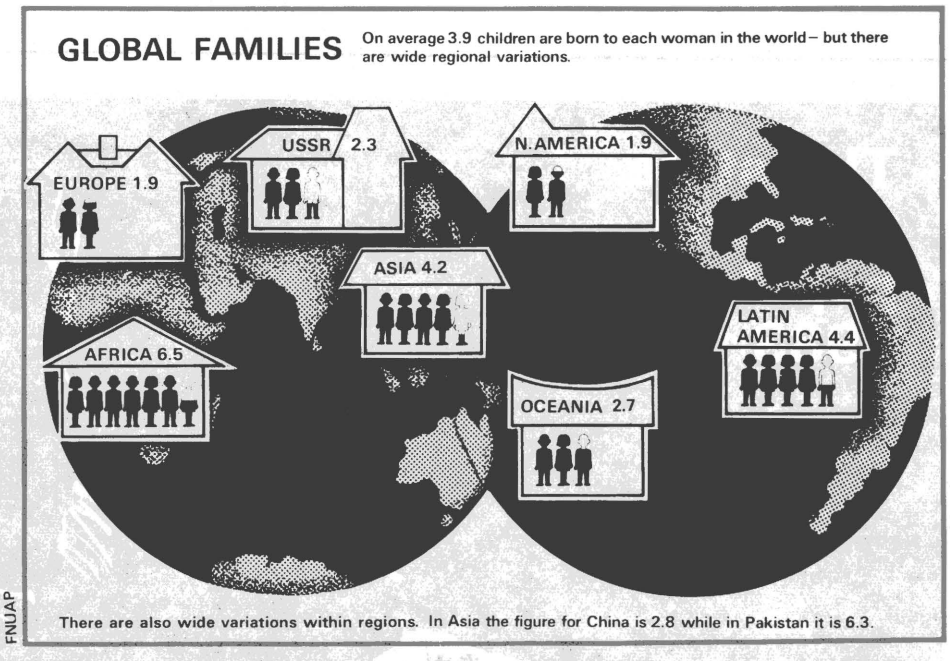
In addition to population growth, the report also looks at population movements, both national and international. At the national level, the drift to the cities is one of the most serious concerns. In 1950, Shangai was the only city in the developing world with a population of more than five million. By the year 2000, however, there will be 45 such cities, mostly in Asia. The rural areas are losing some of their most valuable young and educated people.

At the international level, the report focuses on migrant workers. They constitute a substantial proportion of the global workforce but their migration, says the report, is being conducted "with an almost complete lack of order and regulation".

Many of these migrants are now crossing borders illegally—as a result both of rising unemployment in their own countries and the reduced official demand for labour in the host countries. There are an estimated four to five million undocumented migrants in North America, two to three million in Latin America, one and a half million in Europe and up to half a million in the Middle East.

1984: Mexico conference

These are just some of the issues that will come up at next year's international conference on population. "In the last analysis," says the report, "all the complexities of population can be reduced to the results of decisions taken by individual men and women." Governments, however, have a responsibility to provide the means for people to make effective decisions. "Measures to improve health standards, education, employment opportunities and the status of women can have considerable effects on decisions about family size and migration. Where these responsibilities are neglected or cannot be fulfilled, the result is damaging both to individual lives and to the prospects of balanced development." ○



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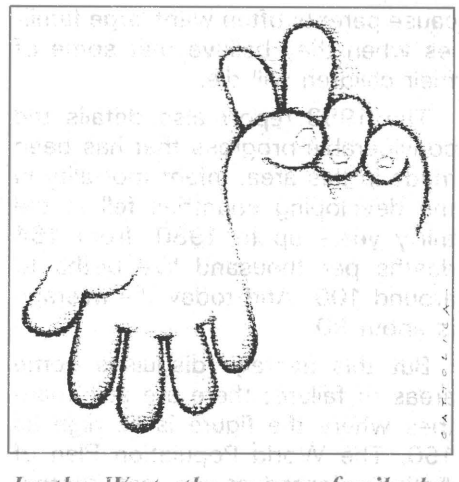
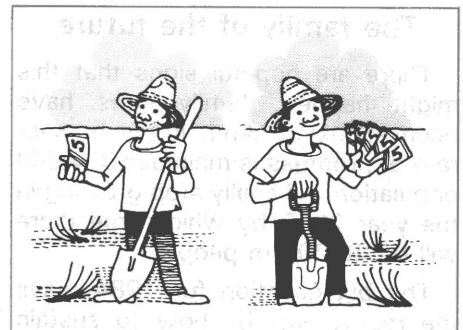

FNUAP

In the West, the average family has two children, while in the Third World it has five. World population will not stabilize, says the 1983 State of World Population Report, until the whole world moves towards the smaller family



ILLEGAL ARRIVALS

Between nine and eleven million workers around the world are 'undocumented migrants' — attracted by salaries far higher than those in their own countries.

SEYCHELLES

"Everything is now geared towards production"

An interview with President France-Albert RENÉ

President René, who has been in power since 1977, can sometimes seem cramped within the frontiers of his little country and the view of the world he gives, very frankly, in this interview occasionally betrays a certain amount of bitterness at being unable to influence the course of events properly. Last year, for example, one of his proposals passed almost unnoticed when it should have been discussed. At the non-aligned summit in New Delhi, President René suggested that a fund be created from a percentage of the military budgets of the developing countries—tantamount to doing themselves what they had long been asking the industrialized countries to do.

The President is a socialist and above all a pragmatist and his stated aim is to base his action on the practical reality of his country. In this interview he talks of the present difficulties and the future prospects of the Seychelles and then gives his views on the North-South dialogue.

▶ *The recent withdrawal of some flights to the Seychelles further aggravated your country's isolation from the outside world. If this continues, what will you do?*

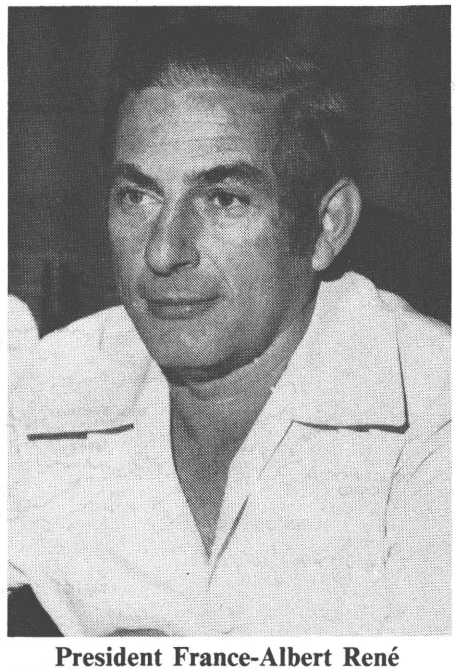
— Obviously the withdrawal of flights by British Airways and Lufthansa has affected us very badly because we now have no possibility of travelling between these two countries, and Europe in general, apart from France, and the Seychelles. We have already taken what we consider to be an essential step in trying to set up an international flight between Europe and the Seychelles by flying from London through Frankfurt to the Seychelles, making use of a British Caledonian plane and staff. This is the best we have been able to do under the circumstances.

▶ *When is this service due to start?*

— It will start in October this year, I don't know the exact date, but I think around the 20th or 22nd.

▶ *The figures of tourist arrivals in the Seychelles for the 1st quarter show a certain increase as compared to the same period last year. Could it be assumed that the worst of the crisis is past?*

— I think that if we had not lost the two flights we would have done much better than we are doing now; the actual increase in the number of tourists coming here now relates to an entirely different market. For example we are getting more people than before from Southern Germany and Switzerland but they are coming on the charter flights rather than on regular flights. I think if we had not lost these two lines, the increase would have been much more, because this market is a different one altogether.



President France-Albert René
"Everybody in the country should have equal opportuny"

▶ *But the decrease started before the cancellation of those two flights.*

— Yes, definitely, the decrease started in the last few years with the economic problems in Europe and certain other factors that caused a reduction in the number of tourists; then we picked up a different market, which is welcome, but it is not the best.

▶ *You mean they do not spend as much money?*

— Exactly. We have an increase in the amount of tourists coming in, but not in the amount of money they have brought in.

▶ *Is it a new orientation of the tourist industry altogether?*

— I wouldn't say a new orientation of the industry, but I would say that we have now allowed a different type of tourism to have a share of the market.

▶ *Is it not also because the Seychelles does not, after all, have the sort of big international hotels that some other destinations can offer?*

— I don't know whether that is the reason. Many people who come here to spend their holiday do not necessarily seek high class international hotels; what they seek is good service, and to have the opportunity to see the beauty of this country, which, I am sure you have gathered, is perhaps insurpassable. I think they come for this, and provided they know what they are coming to, and there is no disappointment. I don't think tourists necessarily mind not coming to a five star hotel provided they are fairly comfortable.

"There will be an upswing"

▶ *Are you confident the industry will pick up and regain its level of 1979?*

— I have no doubt whatsoever that the signs are there, the industry is beginning to pick up again. We need a big effort in marketing and we also need to make an effort to present a true picture of the Seychelles. There has been a tendency in the past couple of years to paint a different picture of the Seychelles than it really is; and I think once this is corrected, we have no doubt whatsoever that there will be an upswing.

A brief history of the Seychelles

The Seychelles is a group of 40 granite islands (the biggest) and 50 coral islands, most of them barely emerging out of the waters of the Indian Ocean between latitudes 3° and 11° and longitudes 46° and 57°. The name comes from Jean Moreau de Seychelles, the financial controller under Louis XV when France officially took possession of the islands in 1756. The country, uninhabited at that stage, had been discovered 14 years earlier by an expedition sent out by Viscount Mahé de Labourdonnais, the governor of Ile de France (now Mauritius), who gave his name to the biggest island in the group,

The first settlement began in the early 1770s when 15 soldiers and 12 slaves put up administrative buildings on the site that was to become Victoria, the capital. A number of colonists from Mauritius and Reunion and their slaves followed their example a few years later, earning a living by selling precious woods and the giant tortoises that were in plentiful supply everywhere but are now found almost nowhere else but on Aldabra where they are strictly protected. The present population is descended from these first settlers who were joined by immigrants from Madagascar, India and China and hundreds of black slaves whom the British fleet saved from the slave traders and set free on the islands.

During the Napoleonic wars, the Seychelles became a base from which French pirates attacked British ships bound for India, but in 1810 Mauritius and the Seychelles fell into the hands of the British, who administered them as one colony until 1903, when the Seychelles became a crown colony. The country continued to develop politically, gaining internal autonomy in 1970 and independence on 28 June 1976 under the presidency of James Mancham, the leader of the Seychelles Democratic Party (SDP), with France-Albert René, the leader of the Seychelles People's United Party (SPUP), as Prime Minister. Less than a year later (5 June 1977), a coup d'état brought Mr René to power and he has remained at the helm ever since.

Profile of the Seychelles

Area: 444 km^2

Principal islands: Mahé, Praslin, la Digue and Silhouette

Capital: Victoria

Population: 65 000

Population growth rate: 0.9% (1977-81)

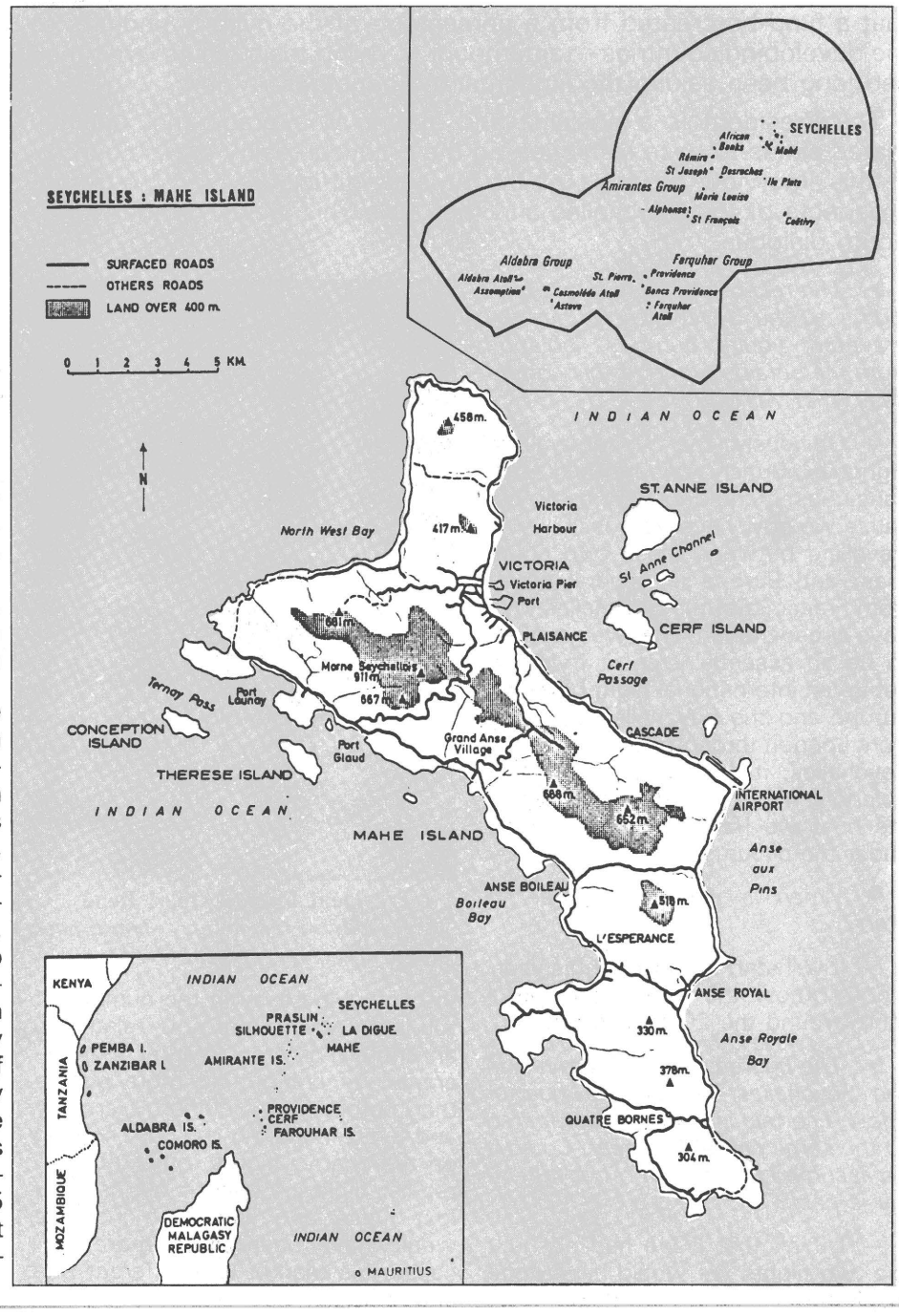
Main exports: copra and cinnamon

Languages: Creole French, English and French

Political Party: Seychelles People's Progressive Front (the only party)

Currency: The Seychelles rupee (SR)

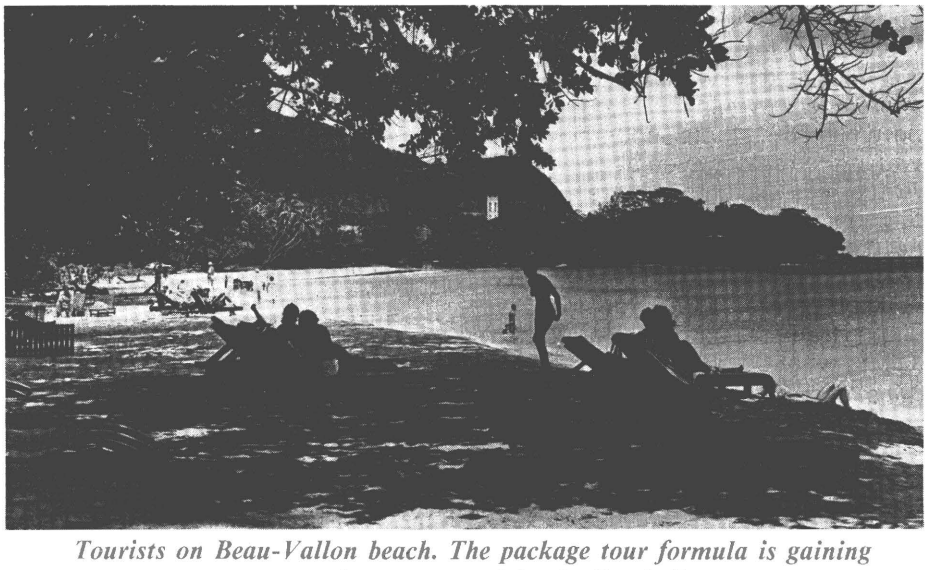
GNP (1980) SR 223 million



▶ *Can it be assumed that the tourist industry developed by itself, that it was not planned?*

— That is true, there was no planned industry before at all. We were a new destination and people are prepared to go and try a new destination. But there was no proper plan, no proper marketing. When the boom came, in 1979, everybody sort of relaxed, there was no marketing done, everything went a little bit dormant, and this is one of the reasons which brought it down.

▶ *The Seychelles received, in '79 and '80, as many tourists as the inhabitants of the country. To what extent can tourism expand without harmful social consequences?*



Tourists on Beau-Vallon beach. The package tour formula is gaining more and more ground in the Seychelles

— First of all we must remember that 70 000 tourists a year really means only having just about 1 500 tourists at a time in the Seychelles. I don't think that 1 500 tourists can have a serious impact on the ecology. I know that we have, up to now, managed to keep the place unspoiled by litter and that sort of thing; in 1979 we succeeded in doing it and I don't see why in future it should be different but we have to have a positive policy with regard to this; our good name in the past has been our cleanliness, that the beaches are unspoiled, and we think we can maintain this.

▶ *Even with the maximum target of 120 000 tourists a year?*

— That is our ceiling, we don't think that we should be able to absorb more than that. It would then become more difficult to control.

▶ *The tourist boom was detrimental to agriculture which used to be the most important economic activity. How do you intend to revitalize this sector?*

— Well, that is a problem we recognized some time ago. Everything is now geared towards production in this country, be it at school or throughout our educational system, and we are definitely increasing the number of people involved in agricultural production, in fisheries and so on. I do not think that tourism, within the sort of limit that we were talking about, will have any effect on the future development of agriculture. In fact we now know that the two can be very complementary, and that tourism can help us produce more and of a better quality for our own people.

▶ *But one of the problems facing agriculture is that there is not enough suitable land and there may be not enough "Seychellois" ready to become farmers?*

— That is true. But, as I told you, there is definitely a trend now for more Seychellois, more young people, to go into agriculture. More of them are prepared to go to the outlying islands where there are much larger areas of cultivable land. The trend is building up; we don't think further development of tourism will affect this in any way.

"We have one of the best fishing zones in the world"

▶ *The Seychelles has great fishing potential, but the country is small and not very populated. How do you plan to develop your large exclusive economic zones?*

— With regard to fishing, we think we have one of the best fishing zones in the world, and it is our hope that the Seychelles could become a centre for fishing. Now this does not need necessarily to apply to national fishing. For example within the EEC cooperation agreements on fishing, many other countries, France, Britain, later Spain, would be able to come here and fish, within certain limits which we have to work out. They could then contribute to the economy throughout the country. But the main thing we want is that the Seychelles become the centre of fishing, certainly the centre of Tuna fishing in the Indian Ocean.

▶ *But does that mean an agreement with a particular state, such as France?*

— Not necessarily at all. With France we hope to start a small joint venture, to see how that goes, but there will be other countries who will be welcome to come and fish, within the context of individual agreements with them, and to make use of the Seychelles as a centre for fishing. What we need to provide, and what we need badly, are the infrastructures, the cold storage, the ports. This is now our priority.

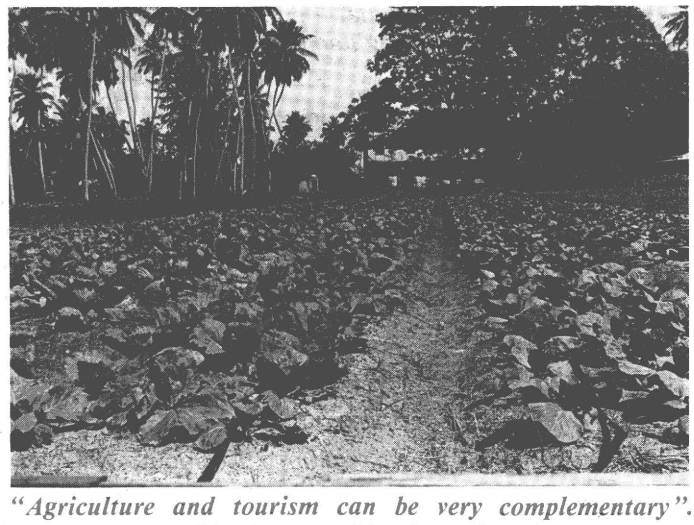
▶ *A few years ago a search for oil was conducted but without any success. Are you still hoping to find oil off the coast of the Seychelles?*

— As you may know, there was a sort of search which ended up in the digging of two wells. Now there has been a complete seismic survey which has been redone and we are now awaiting the results, so it is not a dead thing at all; it is continuing in a different form.

▶ *The five year development plan suffered from a decrease in foreign aid in 1981. Has the cash flow increased since then?*

— Foreign aid is something that depends on so many factors. Some of them are not within our control. We have our plan and we try to get the necessary aid to put it into execution. Sometimes the funds do not turn up. To give you an example, we had an agreement with Iraq for considerable assistance to our development, and then came the war (with Iran). That finished the whole Iraqi

The Seychelles has great fishing potential



"Agriculture and tourism can be very complementary". Here a vegetable plantation

assistance. There are the sort of things that happen all the time; equally the assistance from Britain reduced, because of the British policy of cutting down its aid to developing countries. Well, we suffered from that. We picked up some of it somewhere else. And it goes on from year to year, it is never very steady.

▶ *The UN promised to set up a special fund to compensate your country for damages due to the mercenary attack. How much of this money did you get?*

— I don't think we have got any. What happened is that a fund was opened to which other countries could contribute, and not so many countries contributed. In fact I think the amount contributed was quite insignificant.

▶ *So out of the 18 million dollars how much did you get?*

— We did not get anything really. We must talk of a few thousand dollars; that's all they contributed.

▶ *Regional cooperation with Mauritius and Madagascar is only starting. Why this delay as compared with other areas in Africa, and what are the main priority areas of this cooperation?*

— Well, you cannot have regional cooperation if you do not have the necessary transport infrastructure. We tried to bring a regional shipping line into being, but the experts decided that it would not pay. Of course nothing pays before you establish the trade, and you cannot establish what the trade will be before you have the transport. So it is a "chicken and egg" problem and the economists always get caught somewhere between the chicken and the egg. If we had the money we would start the shipping line because we believe that within two or three years there would be enough trade between the three countries, and within the region, even as far as East Africa. For example we are not getting our sugar from Mauritius, why not? Because we don't have any transport from Mauritius. Now, if we had the transport we would get out sugar from Mauritius. If you start asking what do we import from Mauritius now, you will find very little. And you will say this does not sustain a shipping line. Of course it doesn't. But if we had a shipping line we would establish the necessary trade that would support it. This is the way we look at it, but the expert who came to do the study said it was not feasible. Not having the money, we are caught with the experts' report.

▶ *Are you saying that the prospects for regional cooperation are not very bright?*

— They cannot be very bright if we have no transport.

▶ *But there is a fund of 20 million units of account under Lomé II set aside to promote regional cooperation in the Indian Ocean.*

— Yes I know, but under Lomé II we have put forward a shipping project and it was turned down. Because the experts says it wouldn't pay. You know, it is always the same. The money is there, but what can we do? It is not like having it in the bank where we can go and take it out. It is a pity because we think it would be a very sound proposition to have our own shipping line in this area.

"Left on your own"

▶ *The mercenary attack against the Seychelles in 1981 underlined the importance of security problems in the Indian Ocean. What are your ideas on this?*

— We have always wanted the Indian Ocean to be a zone of peace. But this does not necessarily alter the fact that you have, at the moment, interests of all sorts of powers in the Indian Ocean. It is currently an area of extreme tension between East and West, between neighbouring countries, between different ideologies.

We are in a very strange political situation in the Indian ocean. If you do not want to sort of adhere to any of the "super-power blocs" you get, to a certain extent, left on your own. Being left on your own, you are necessarily subjected to a lot of attacks from certain interests, and the mercenary invasion was one of those. It so happens that we have no defence pact, for example, with anybody and everybody thought it was very easy just to send 50 white mercenaries to the Seychelles to take over the government and change it into something more suitable to South African, perhaps Western, interests, in the area. This was at the base of the mercenary invasion. It was in the interest of South Africa that the Seychelles should have a different government. Why?

Because at the particular time, or now, or at anytime in the future they would like South African Airways to fly here, as a point of access to the East. At the moment they are using Mauritius. At that time they did not

know what was going to happen in Mauritius. It was just before the elections there. So why not change the Seychelles from being a place which does not give them landing rights to one which does?

▶ *They are not allowed to land here?*

— They're not. That was the main thing. They thought the new Mauritian government which they felt would get in wouldn't allow them to continue. So what did they do? They said to themselves, right, Seychelles is a small place, we can take it over and then put in a government which says yes to South African Airways. It is small things like this which prompt them to give backing to some people who want to do something.

▶ *Your government is socialist-oriented. Could you define the kind of socialism you want to build in this country?*

— Well I don't know how you define any kind of socialism. To me, socialism is socialism. I know it is being called by all sorts of names, but we consider socialism to be sort of summed up in the words "equal opportunity". Immaterial of your colour, race, creed, social position, everybody in the country should have equal opportunity. We don't believe and I don't know anybody who believes, that we can make everybody equal, but we do believe that everybody should have equal opportunity. And this should not be based on his past, or the present situation of his family, for example. So the whole

"We want our ideology to be based on reality"

basis of our socialism stems from our system of education, where we think that every child should have equal opportunity. If he is weak he should be given more opportunity. If he comes from a family for example who can't read and write, where he cannot go home in the evening to have the opportunity of his parents helping him, something must be done to help him counterbalance this, so that he has equal opportunity. If he is intelligent, he will be able to get on and that is one thing. Turn the picture around, we also think that in a society there should be no difference between somebody who is a doctor or somebody who is a carpenter, or an agricultural labourer; there should be no difference of status. And this is the reason why we have what we call national youth service, where everybody should be brothers and sisters from a young age; one will become a doctor, the other will become a labourer. It does not matter, they will have known, lived with and understood each other. This is what our socialism is based on. We think that's the way people should live in society. It is like in a family, which we often take as an example. The father may be a brilliant scholar, and the mother an illiterate, one son may become a carpenter, the other son a lawyer, and the third one may be an idiot. That's the family. There, they are not any different.

▶ *So you wouldn't put too much emphasis on ideology as is done in other countries?*

— Oh no. We want our ideology to be based on reality.

▶ *How do people react to those proposals?*

— People see it as being a good goal. But they know that it is not easy to achieve. Having come from a class society, a strongly capitalist society, they feel it's hard, but more and more the young people are coming up with these ideas.

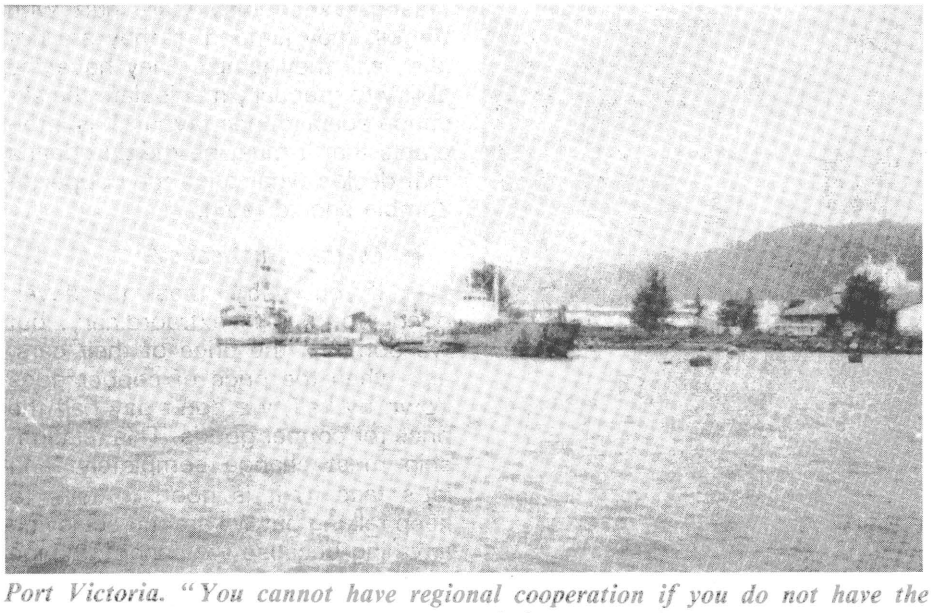
▶ *But most of the rich élite has left the country.*

— Yes they have, well most have, but still there are a few around, unfortunately.

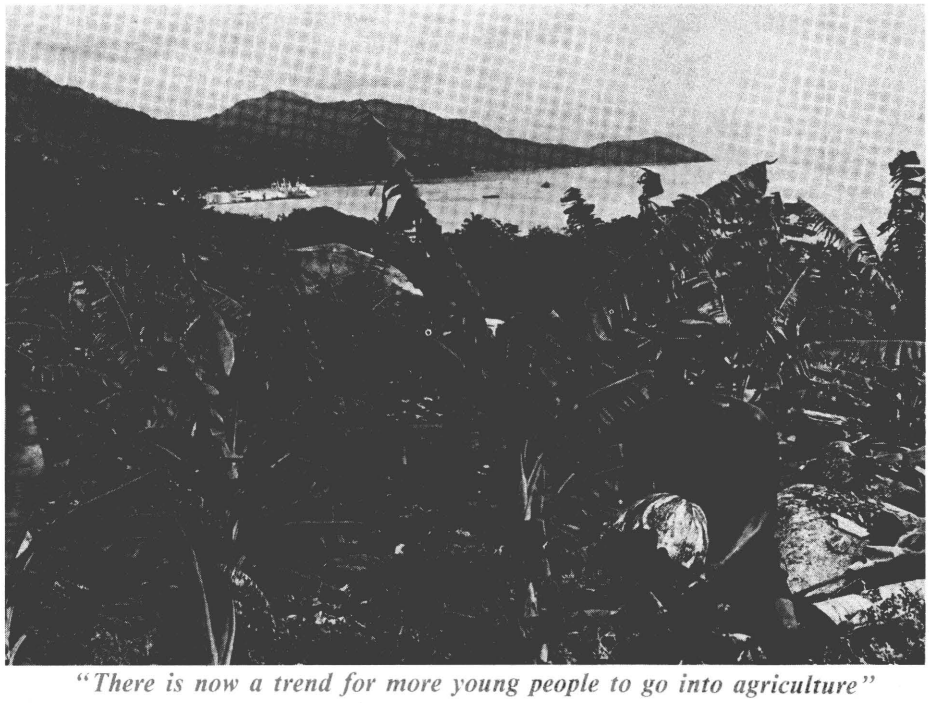
"I don't think Europe understands the developing world"

▶ *In a few weeks the negotiations for the renewal of the Lomé convention will start in Brussels. What do you think of your relationship with Europe and what changes would you like to see in any future agreement?*

— This is a very difficult question, because I don't think Europe understands the developing world at all. I am talking of the philosophy behind the whole thing. It is just like saying; right we are better off, and we think we can afford to spare this much, and we will help these poor people over there. Now to me that philosophy is wrong, and we will end up in a very chaotic situation. They do not look at the developing world as a part of humanity as a whole which will also condition their own development. It is no use our going to



Port Victoria. "You cannot have regional cooperation if you do not have the necessary transport infrastructure"



"There is now a trend for more young people to go into agriculture"

meetings and trying to explain to them, they just don't see it.

▶ *But Europeans often talk about the inter-relationship between the development of the Third World and their own development?*

— They are beginning to see it more and more, because it hurts them. When it hurts, you say, why am I hurt? They are not talking about the interrelationship because the developing world is hurt and has been hurt for dozens and dozens of years, it is because they are just beginning to feel the pin prick of poverty. They are beginning to feel that there is something wrong with our system, that we cannot go on alone. And they are beginning to ask, why cannot they go on alone? But if tomorrow the economic situation in Europe improves, they will forget such questions again. It is a very selfish way of looking at the world as it stands today. They have been hurt and they have reacted to this to a certain extent, but in which way have they reacted? They talk about it, but in actual fact, if Europe is not prepared to accept the fact that they've got to drop their standard of living, and they are not, no European is, particularly the unemployed European, they will never be able to change their or our situation.

▶ *According to you, what kind of assistance do the developing countries need? What can Europe provide?*

— First of all I think that Europe should make available much more development funds, be prepared to accept the fact that the developing world must also become producers. Currently they are not prepared to accept this.

▶ *Producers of industrialized goods?*

— Of everything. Let's take Europe and the ACP countries. They should be able to sit together and plan the development of Europe and the ACP countries so that they complement each other. Europe for example might say, why should we bring rubber from an ACP country to England to be turned into tyres? Why shouldn't it be turned into tyres there and then sent here so that we should put them on motorcars. These are the various things that have to be worked out.

"We cannot change minds"

▶ *There is a difficulty in that: while the ACP negotiate with the European governments, it is the European firms that invest in ACP countries or import from ACP countries.*

— Well, that is another form of neo-colonialism which should not be. It should be the ACP countries that produces these goods, and they should accept that these countries should produce them. But it does not work that way because we are still seeing the world as two worlds.

▶ *So, to sum up, you are very pessimistic about the North-South dialogue?*

— Yes, I am. I think in the next five to ten years we are not going to see a change of mind in Europe. They must be hit much harder, and they will be. It is a pity that there is not enough unity in the developing world. That is the great pity.

▶ *But the poorer countries will be very badly hit too.*

— Yes, there is no doubt whatsoever they will always be the worst hit. But sometimes you have to go through this to achieve something else. Perhaps the poorer countries can take it more than the rich can, but to me it is a catastrophic situation. I don't think it will change the minds of the European people and governments. Not of this generation anyway, I doubt whether of the next either. The only way they can change is by feeling. They do not change by reason. When they were hurt with the oil, they jumped. If they are not hurt, will they jump? They have the ability to gradually manipulate the situation again in their favour. It is intolerable that it must be the Europeans that decide what price the copper of Zambia should fetch.

▶ *Or the Americans?*

— If you wish; I mean the developed world. It is extraordinary, but we don't fix the price of their cars, and when the price of copper goes down by half, we don't pay half the price for copper goods. This relationship must change completely, and let's face it, it is good to talk, to keep talking but we are not achieving anything because we cannot change minds. ○

Interview by
Amadou TRAORÉ

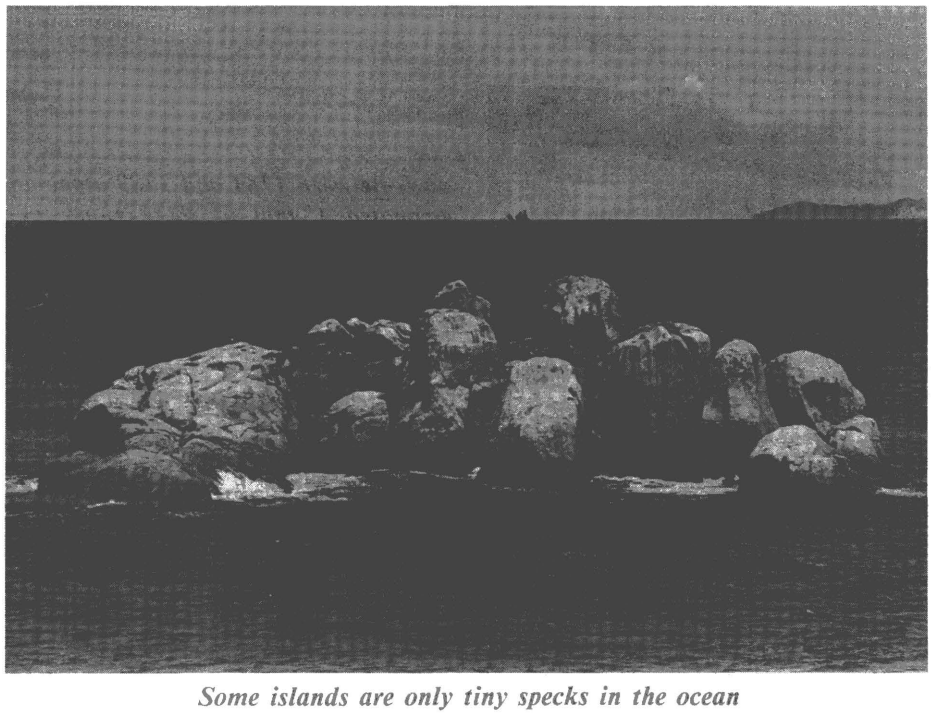
The Seychelles is the only place in the world to have the well-known sea coconuts or double coconuts, as they are sometimes called (see above). Although they have become acclimatized to Mahé, where they grow in the botanical gardens, these particular palms with their unusual coconuts in fact come from Praslin, the second largest granitic island in the group. There are 4000 of the palms in the Vallée de Mai alone and the biggest of them are almost 800 years old—so they are far older than the record-holding tortoises that filled Mahé when it was discovered. Between 1784 and 1789 alone an estimated 13 000 of these giant tortoises were exported from Mahé and, today, the species is a dying one which is only now found at liberty on Aldabra.

The Seychelles is a crossroads for Africa, Asia and Europe and many different people live there. Every race is represented in the Seychelles society and there has been intense crossbreeding over the centuries, as this photo of young students coming home from school illustrates.

The end of a certain idyllic way of life

The runway of Mahé airport, a 2987 m stretch of concrete that fits tightly between hills and waves along virtually the whole length of a rocky headland jutting into the sea, is the perfect illustration of the notion that infrastructure can sometimes create its own demand (see our interview with the President of the Seychelles). A look at the figures shows a clear link between the opening of the airport in 1971 and soaring tourist arrivals. Until that year, access to the 40 granite and 52 coral islands of this archipelago that covers a million km^2 of Indian Ocean was very difficult and contact with the outside world restricted as a result. In 1971, only 3175 tourists visited the Seychelles, but there were 15 187 the following year and the upward trend continued, with an increase of 27 % per annum until 1979 when it reached its peak of almost 80 000 visitors — many more than the local population of around 65 000. At that time, they say nostalgically, 11 airlines ran at least one flight a week to Mahé.

The sudden desire to visit these islands at the end of the earth did not just occur because the airport was completed, of course. But because the Seychelles was somewhere new to go, it attracted a very wealthy international clientèle, people who were always anxious to try something different. A few years back, fashion demanded holidays in the Seychelles and whole pages of the popular magazines were filled with pictures of its white sandy beaches and palm trees swaying by a limpid blue sea. That was the era when top financiers, oil-rich emirs and show business stars converged on the islands and bought houses there. "All the big stars came to us", said civil aviation head Maurice Loustau-Lalanne. "We had Peter Sellers and John Travolta, Sylvia Christel and Shirley Bassey. George Harrison of the former Beatles pop group and Peter Sellers even wanted to have a hotel built here."



Some islands are only tiny specks in the ocean

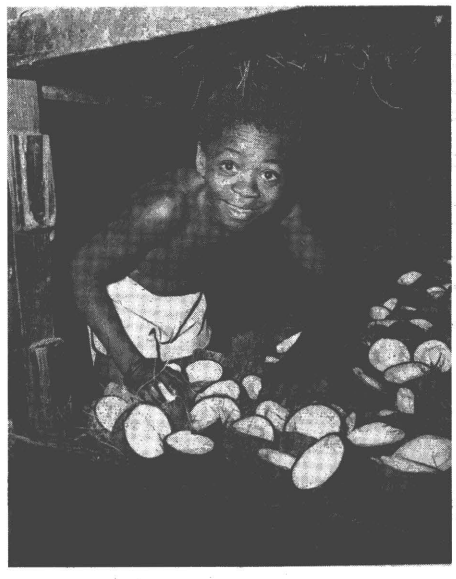
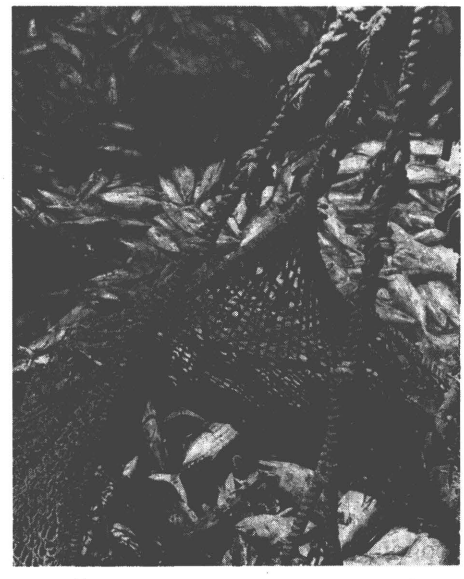
Vicious circle

The Jet Set sometimes starts the ball rolling and many were those who set off in its wake to discover the magic of the Seychelles' shores. In 1979, 78 852 visitors arrived, some of them fleeing justice in their own countries and seeking evasion on these distant sands. In the past, of course, the country was often a refuge for adventurers, who found safety in isolation.

France has always sent the biggest contingent of tourists and it is followed by the United Kingdom, Italy and Germany. But 1979 saw a change in the development of the tourist trade when the number of visitors, which had been increasing regularly, began to decrease at a similar rate, dropping by 40 % to 47 280 in 1982, well below the 50 000 or so arrivals of 1976. It is easy to imagine what the consequences of this spectacular decline in the country's main economic activity have been, as the tourist trade accounts for about 90 % of the state's foreign exchange earnings and one third of all jobs; a balance of payments deficit, less state income and a consequent problem with the financing of public spending, redundancies in some sectors, reduction in certain flights to the Seychelles and ultimate discontinuation of others as there are no longer enough tourists to fill the planes. British Airways and Lufthansa recently stopped flying to Mahé, following the example of Zambia Airways, Air Madagascar and Air India. Only six of the 11 airlines that had flights to the Seychelles in 1979 maintain them today. Fewer flights mean fewer tourists and the Seychelles is getting harder and harder to get to again. There was only one

Seychelles Information Services

The famous clocktower in Victoria

Cinnamon exports have slumped over the past few years, although copra exports (centre) have been maintained and even increased in value. But the Seychelles places its highest hopes on the sea

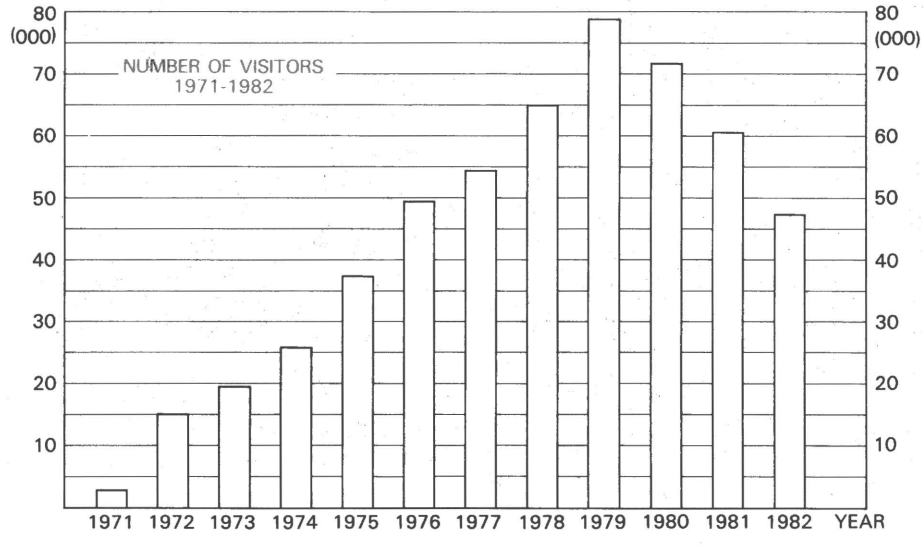
thing the government could do to avoid being trapped in this vicious circle—venture into air transport—and this it began to do, cautiously, in October 1983 when it chartered a British Caledonian 298-seater plane and introduced a weekly London-Frankfurt-Mahé flight. However, in view of the risk, the contract is only for six months with an option to extend to a full year. If the venture works, a second flight per week may be started.

Original sin

Will this solve the crisis in the tourist trade? It is by no means sure that it will, as the root causes lie elsewhere in the world economic crisis, the declining purchasing power of the Europeans and soaring air fares. And the Seychelles also suffered from adverse publicity after mercenaries attacked Mahé airport, making the islands appear unsafe and putting the tourists off. Then there is the by no means negligible fact that the Jet-Setters have left the Seychelles for the Maldives, the latest trendy spot, and there is competition from Mauritius, Reunion, Sri Lanka and Kenya too. All these countries are benefitting from the Seychelles' currency revaluation and attendant price increases at a time when other places in the region are devaluing. So the top end of the tourist market, on which the Seychelles has set its sights, sometimes finds it can get a better deal—and the same quality—elsewhere.

But the original sin, as the government now freely admits (see our interview with President René), was that it did nothing to promote tourism abroad, thinking that, because the tourist trade grew up under its own steam, there was no need for anyone to do anything to help maintain or develop it. Mr Maxime Ferrari, Minister for Planning and External Relations, says: « They told us we had such a wonderful country, such a paradise, and we got the idea that we didn't need to spend a lot of money to sell the Seychelles to the tourists, so we stopped. » This was a tragic mistake, because, at the same time, other countries in the region were organizing competition and giving themselves what it took to win.

This laxism has gone for good. The authorities are determined to remove all obstacles to the development of the tourist trade and, with the problem of transport temporarily solved, they will be tackling the promotion side. Tourist agencies in Europe will be reactivated and advertizing campaigns will be run in collaboration with other countries of the Indian Ocean. At home, the idea is to modernize some of the hotels (and many of them need it) and to take a greater interest in their management so as to avoid them changing hands too regularly as has all too often happened, alas, in the past. But the hardest decision will, no doubt, be to widen the range of activities available to the tourist. The Seychelles has long had moral reservations about opening casinos and going in for after-dark entertainment of the night-club variety. But since relaunching tourism means compromising on this, then compromise they must, admits Mr G. Morel, Principal secre-

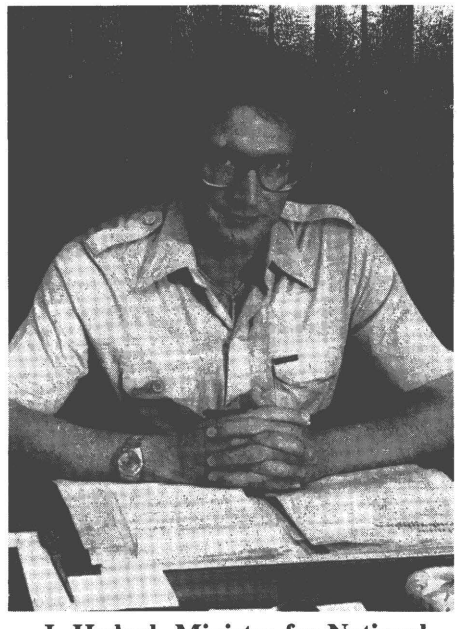


tary at the Ministry of Finance and Industry and temporary director of tourism, with resignation, as he does recognize that the country has not much entertainment to offer.

Sacrifices

While waiting for these measures (they also include cutting the hotel turnover tax from 10% to 5% and doing away with airport taxes) to bear fruit, the Seychelles will have to tighten its belt a little, in accordance with President France-Albert René's request on 30 June when he announced higher taxes on high salaries. He talked about the country's economic situation, announcing a whole series of measures (tax increases for the most part) aimed at cutting back on imports, which were deemed to be too high. In 1981, the Seychelles daily *La Nation* put these imports up round the SRs 589 m mark (i.e. 9000 rupees per head of the population) as against the SRs 89 m worth of export earnings. Customs duties have gone up on such things as luxury items and ready-to-wear clothing from 50% to 100% and cars can no longer be imported without a special licence from the Ministry of Finance and Industry. These sacrifices, the President said, have to be made to help the country's economy and increase its foreign exchange reserves.

The Seychelles intends achieving its aims by making the most of its other economic asset, the sea. Although the country has a total of

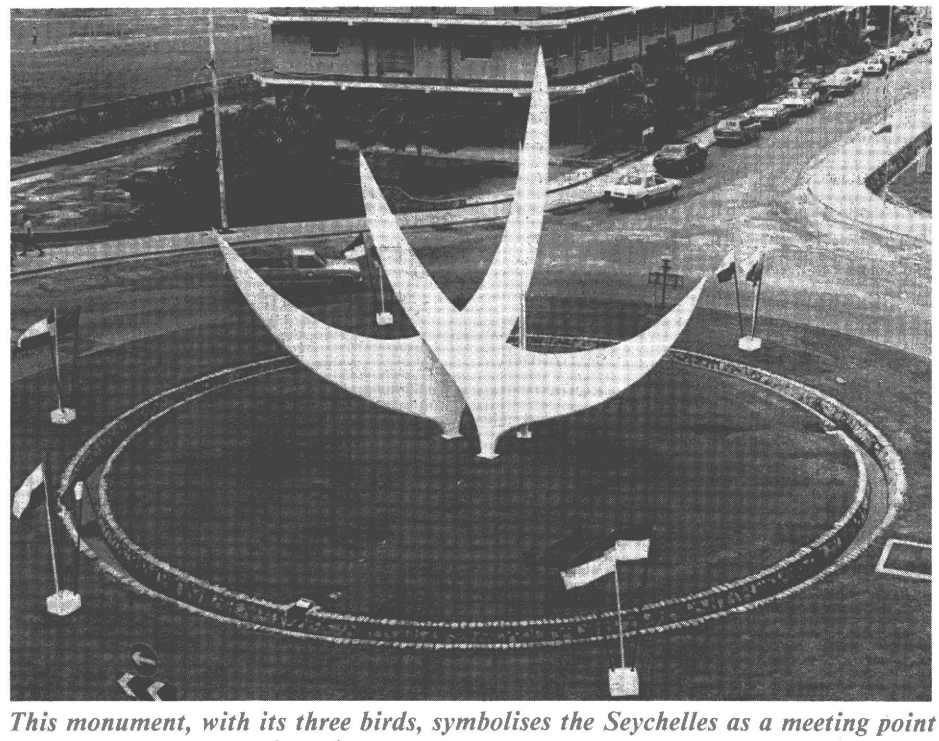


J. Hodoul, Minister for National Development, *"Now we are going to wage the production campaign"*

only 444 km^2 land area, it has something like 1 000 000 km^2 of Exclusive Economic Zone (EEZ) and the coastal waters are very rich in fish of all kinds. The Seychelles apparently holds the fish consumption record, as each inhabitant consumes almost 90 kg of fish per year. The fish market is kept supplied by about 1400 full-time fishermen and thousands of part-timers. Two years ago, the state set up the Fishing Development Corporation (FIDECO) to develop small fishing concerns and get them semi-industrialized. FIDECO has 20 vessels and 150 fishermen (they are paid for what they catch) and it exports 200 tonnes fresh fish and 500 t deep-frozen fish to Reunion, France and Belgium. Exports to Germany stopped when Lufthansa flights to Mahé were discontinued. But Mr C.B.J. Lablache, the director-general, is optimistic and hopes that the company will be showing a profit this year, although he is aware that development prospects are limited because of the distance between the Seychelles and its markets. So, it is not this kind of fishing that holds hope for the country's future.

The big thing over the coming years will be tuna fishing, as the Seychelles has very considerable reserves in its EEZ. For the past four years, foreign vessels have been fishing tuna under licence and before that, the Japanese and the Koreans fished freely without asking anyone's permission. The authorities want to make the Seychelles the tuna fishing centre in the Indian Ocean and this will have a great effect on training, the transfer of technology and employment — which is why they have had talks with the Community with a view to concluding a fishing agreement. European fishermen, particularly the French, are interested in the possibilities which the Seychelles offers, as they want to diversify (traditionally they fish in the Atlantic,

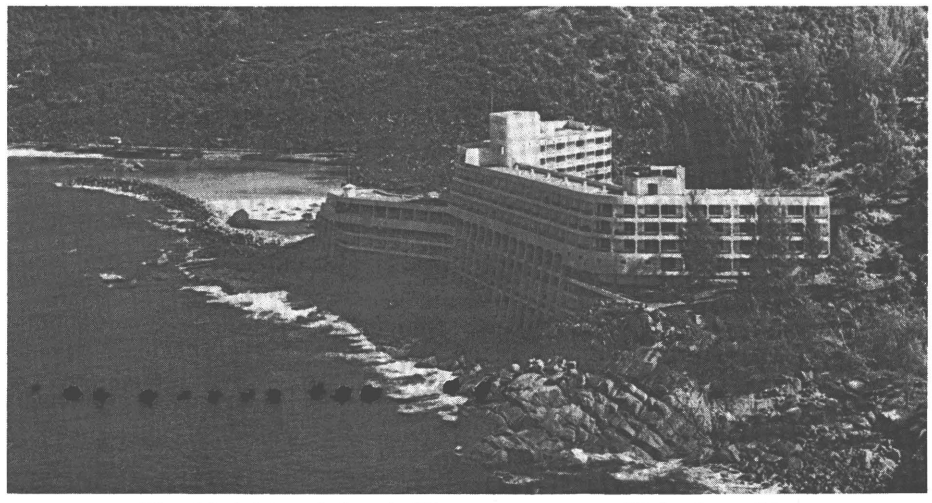
A tea plantation



This monument, with its three birds, symbolises the Seychelles as a meeting point for Africans, Asians and Europeans

which is somewhat saturated now with competition from the Spaniards, the Mexicans and the Americans) and the French ship-owners ran their first exploratory campaign from December 1981 to June 1982. The catches were not bad, according to Marcel Raynaud, the director of the French fisheries development consortium, particularly bearing in mind that only one vessel was involved. The French returned to the attack in December 1982, this time with a fleet of four, to confirm their previous findings.

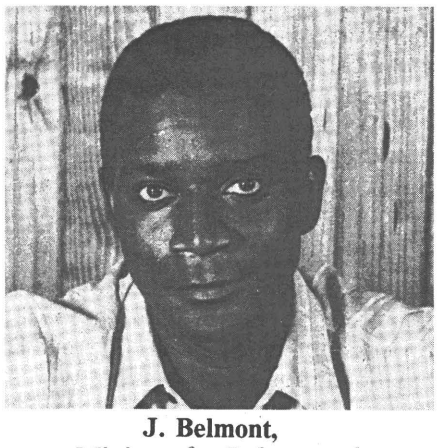
These negotiations for a fishing agreement, which are the Community's province, will, if they are suc-



The Mahé beach hotel. The government will be launching a hotel modernization programme

Is the Seychelles a poor country?

As External Relations Minister Maxime Ferrari says, some things are much easier to achieve in a small country. How else could you explain that the Seychelles has a social security system of a sort only found in the developed countries? Any Seychelles national without a job can work half time (from 7 a.m. to noon) maintaining the parks and cleaning public grounds for 20 rupees a day — about as much, on a monthly basis, as the minimum guaranteed wage of 500 rupees (although the government and many private employers pay 1000). According to Mr J. Belmont, the Minister for Labour and Social Security, there are, at the moment,about 350 people benefitting from this kind of unemployment benefit, which is paid—and the Minister stresses this—not for no return, as is the case elsewhere, but in exchange for work that is useful to the Community as a whole. Women make up 80 % of this particular group, as, since their children can now eat free of charge in the school canteens (another social benefit), they have a great deal of free time.



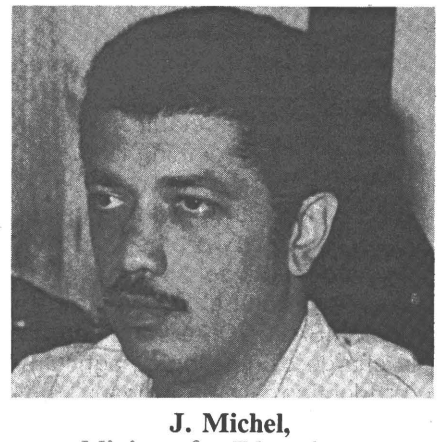
J. Belmont,
Minister for Labour and Social Security

Children are the subject of the greatest concern. "Are they not the seed of the Seychelles' future society" Mr J. Michel, Minister for Education and Information asks. They follow a nine-year course of compulsory schooling, as in many of the developed countries, and then, if they wish, they can do two years' national service, which is an opportunity to learn manual skills such as carpentry and farming. The aim of national service is to break down the social barriers and upgrade manual jobs. But all this costs money. The education budget represents 28 % of state expenditure.

Another very expensive policy is the social housing construction scheme. The government has an ambitious programme on the drawing board and it aims to provide all Seychelles' families with decent housing over the next five years. Houses will be allocated according to needs and families will be means-tested to gauge repayments — which will never go beyond 20 % of the monthly income. There are currently 11 sets of social housing under construction and the average cost is around 90 000 rupees. It is hoped to bring this down to 65 000 or 60 000 rupees by using prefabricated building units. Once again it is social security that is covering the bulk of the financing of this programme and the repayments do the rest. Social security also pays old age pensions, covers health costs (sometimes for treatment abroad) and burial costs. The funds come from contributions from wage earners, who pay in 5 % of earnings, and from employers, who pay in 10 %.

So it should come as no surprise that, with their education and their health taken care of, the people of the Seychelles live to a ripe old age (65 on average for men and 70 for women, figures comparable with those of the developed countries) and that cardiovascular diseases, the affliction of the rich, are one of the main causes of death.

o A.T.



J. Michel,
Minister for Education and Information

cessful, give the Ten the right to fish in the territorial waters of the Seychelles; the French ship-owners would also be the state's partners in a joint venture, the Société Thonière Seychelloise. So everything seems to point to increasing European involvement in the Seychelles fishing sector — although the agreement has yet to be signed.

Promoting farming

"So far, we have invested a lot in the social sector, particularly education. What we are going to do now is wage the production campaign in agriculture, the other great priority", said Mr J. Hodoul, Seychelles' National Development Minister and a fifth generation descendant of Jean-François Hodoul, one of those who spoke out against British domination in the Indian Ocean in the early 19th century. But farming does not have the assets of fishing. Far from it. To begin with, there is very little arable land and where there is land that could be farmed on the far-off islands in the group, there is very often a problem of water and as 90 % of the population lives on Mahé, the largest island in the group, labour is a problem too. And lastly, there is no tradition of farming and it would be more appropriate to talk about the gathering rather than the growing of copra and cinnamon, the two main agricultural exports. The Seychelles exports 3000 t copra annually, a figure that has remained stable for several years, although the fob value has gone up from SRs 1400 per t in 1973 to 5300 in 1980. Cinnamon exports, on the other hand, dropped by about 50 % over the same period, from 1000 t in 1973 to only 522 t in 1980.

Alongside this, there are 650 small farmers producing three quarters of all the fruit and vegetables sold on the market and something like 4500 part-time farmers who have small patches of land around their houses and keep one or two pigs. In 1980, the government set up the Seychelles Agricultural Development Company (SADECO), a state company in charge of developing agricultural production. The Company runs seven farms and produces not only fruit and vegetables, but also copra and tea (160 t in 1982-83). In addition to these, it markets 10 000 day-old chicks per month. "What we need", G. Payet, Principal Secretary at the Ministry for National Development said, "is to have more SADECOs with specific aims". Meanwhile, a new state farm has been set up on Praslin to produce sweet potatoes, plantains, taro and fruits. Mr Payet, who is confident about the Seychelles becoming self-sufficient in food (although not in all products), thinks the country's young people have to be trained for agriculture and attracted to the sector by bridging the gap between agricultural and non-agricultural earnings. The school has a vital role to play in this change and, from an early age, people have to understand that farming could provide as many jobs as fishing — hence the field by each school where pupils can learn about farming and put their knowledge into practice. This training will be consolidated during the two years of national service, which has to be completed before starting work or going on to higher education.

After the euphoric years of the tourist boom and large-scale social spending, the Seychelles has entered a period of relative austerity when caution and realism mean that the foundations for more diversified development must be laid. This is what the government has said it intends to do. But in such a small country, where most of the people's vital needs are catered for and nature is so bountiful, it may be very difficult to achieve the vital mobilization and motivation needed to reach this goal. But, like it or not, it is the end of a certain idyllic way of life. o A.T.

CID's cooperation with the Seychelles

An official mission led by the deputy-director of the CID visited the Seychelles in October 1982. This was the first CID mission to this country. As countries of this size have difficulty in benefitting fully from the Lomé Convention, the government showed much appreciation of the mission and, as a result, recommended an institutional CID antenna in the Seychelles (who was appointed in January 1983).

The mission was invited to assist with the official launching of the national development plan 1982-86.

Poultry (NAIL)

A chicken hatchery, for which the feasibility study was mainly financed by CID, became operational at the end of 1982 with a capacity of 320 000 day-old chicks a year, to be supplied to private farms and the SADECO broiler farm.

Lime

The CID co-financed a feasibility study for a project aimed at producing 200 tonnes of lime annually from coral, for the local market. An experimental kiln is operational now. Implementation is to be confined to a parastatal body.

Salt

The CID co-financed a feasibility study for this project aimed at the production of 300 tonnes of sea salt annually for local consumption. Although implemented in 1982, no salt could be produced due to unexpected rain during the dry season.

Clay bricks

For this project, CID financed clay tests in Europe. The project is going ahead with financial support from Czechoslovakia and UNIDO.

Coconut processing programme

At the request of the government, the CID identified a potential technical and marketing partner for the carbonization of coconut shells. A CID co-financed feasibility study was completed in 1982 on the production of activated charcoal and secondary products.

This project could form part of a plan for an integrated coconut industry to be set up with emphasis on coconut oil extraction. The CID has been requested to assist with a general study of the possibilities for an integrated coconut industry. The study will take place early in 1984. o

The future of the Seychelles is the sea, Maxime Ferrari says

"The small countries have to be protected from the threat of destabilization and people have to be told about them, as very little gets into the news. There is often a lot going on in the big countries, good things and bad things like wars and attacks and natural disasters. My country has been spared of disasters, but it is still very important for people to know about it." So says Dr. Maxime Ferrari, the Seychelles' lively Foreign Affairs Minister, an old political hand who has been in every cabinet since independence. He is a member of the central committee of the country's only party, the Seychelles People's Progressive Front, and it is he who represents the islands at the big international meetings, in particular those between the ACP group and the EEC. His role, as he is the first to admit, is to tell everyone that, although the Seychelles is a real paradise for tourists, it is by no means a paradise for the people who live and work there and have to cope with the economic problems of a developing country.

This work in public relations that the Foreign Affairs Minister does is all the more important for the Seychelles, having only very few diplomats representing it abroad. It is particularly vital at the moment, as the Seychelles' quality image has been somewhat tarnished since the mercenaries attacked Victoria airport in November 1981. When the *Courier* met Dr Ferrari, he had just returned from Vienna, where he had been finalizing a million dollars' worth of assistance for the balance of payments from OPEC, and Algiers, where he had also been discussing cooperation.

Dr Ferrari is also head of the Department of Planning and, as such, is one of the people responsible for the economic future of the islands. Ask him how a small country like the Seychelles, with a fairly high standard of living, can go on developing and he immediately points to the sea. "We do not think that the future of the Seychelles is on the little bit of land we have. We think it is in our million km^2 of exclusive economic zone." The sea is rich in fish and the government, which is currently negotiating a fishing agreement with the EEC, is also hoping to find off-shore oil fields. Some test drilling has already been done and more is planned. However, in the immediate future—and here the head of the Seychelles' diplomacy is realistic—tourism is the driving force of the country's economy. It is because, "there are millions of tourists every year that the people go on catching more and more fish,

Dr Ferrari signs a financing agreement with development commissioner Edgard Pisani during a visit to Brussels

growing more and more fruit and vegetables and producing more and more handicrafts". But the tourist industry is in a state of crisis, and a severe one at that, and Dr Ferrari has paid particular attention to this over the past year or two. The Minister has been advocating a "tourisbex" system that would compensate for any loss of earnings from tourism. His argument is a simple one: the Seychelles gets no benefit from Stabex or the Sugar Protocol or Sysmin, the three devices that supplement EDF aid in the ACP countries. His idea, therefore, is that an additional instrument should be created to help those ACP countries with tourist industries which reap no benefit from the systems of the Lomé Convention other than the EDF.

As Lomé II provides no such instrument, however, the Seychelles' repeated requests have fallen on deaf ears, so Dr Ferrari is going to take another aim and follow the advice development commissioner Edgard Pisani gave him: instead of trying to compensate for loss of earnings with transfers, which cannot be made, and with reason, it would be a better idea to try to push up tourist earnings by attracting more visitors. But how? As Dr Ferrari explained: "We are going to ask the Community to start a series of measures, within the framework of regional tourism in the Indian Ocean, to get the Seychelles' tourist industry off the ground again with more vigour and, most important, with more professional know-how".

Dr Ferrari's realistic approach is also evident in his assessment of the state companies on the island. "These state companies, which reflect the Seychelles government's socialist politics, started proliferating a couple of years ago". This is justified, he says, by the fact that the "private sector shoulders no responsibility at all for some of the links in the economic chain". For example, it has never set up an agro-food industry to preserve fruit and vegetables, as this is not felt to be profitable. And the government too knows that it would not be profitable immediately. But it also knows that such an industry would be a stimulus for agricultural development, which is why it has created a semi-state body (it is run like a private company but the state holds all the shares) "which is prepared to lose money for the first few years but hopes to recuperate its investments once the planters push up their production".

When we asked Dr Ferrari whether he feared that the public sector might become a bottomless pit in which to sink state money, he said that, of course, there was a risk of bad management and corruption but that the government was doing its best to avoid this. And as he himself said, "In a small country, it's easier. No corrupt person lasts long. And for the last few years, the Finance Ministry has been making a remarkable effort to control the financial management of our semi-state companies"

But, Dr Ferrari emphasized, the Seychelles' economy is still a mixed one where the private sector is every bit as important as it was, particularly in the tourist industry. o

EEC-Seychelles cooperation (1)

The Seychelles applied to join the Lomé Convention immediately after independence on 29 June 1976 and the act of accession was signed two months later, on 27 August 1976.

After a fairly slow start, EEC-Seychelles cooperation has developed in a satisfactory manner and the full amount of the 4th EDF indicative programme (ECU 2 500 000) and 80 % of the 5th EDF programme have so far been committed.

Under the two Lomé agreements, the Seychelles has benefitted from the instruments of financial and technical cooperation, the regional cooperation funds, exceptional aid, food aid and EIB resources and Community aid has, overall, been of considerable help in achieving the government's priorities. A substantial percentage of the monies from the EDF has been earmarked for the development of social and village infrastructure, but, in view of the problems currently facing the Seychelles' economy, the authorities now intend channelling more Community aid into developing production, particularly in agriculture and fisheries, and expanding the tourist industry, as the economic future of the country depends on the balanced development of these three sectors.

Cooperation under Lomé I (4th EDF)

In May 1977, a programming mission from the EEC Commission went to the Seychelles and drew up an indicative programme worth ECU 2.5 m with the agreement of the local authorities.

Improvements to the social infrastructure took 60 % of the means available under the 4th EDF. They involved a site improvement programme under which facilities (access roads, water, electricity and drainage) were provided for 300 plots and 300 modest houses were built and financed through generous mortgage arrangements (at 2 % interest over 25 years).

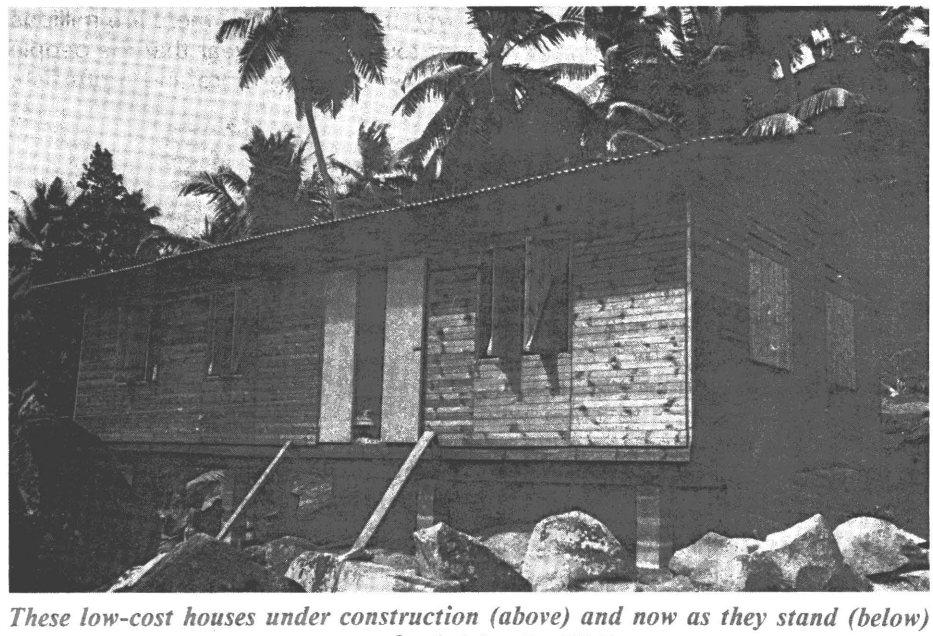
An ECU 260 000 water supply project brought drinking water to two villages, La Louise and La Gogue, on southern and central Mahé.

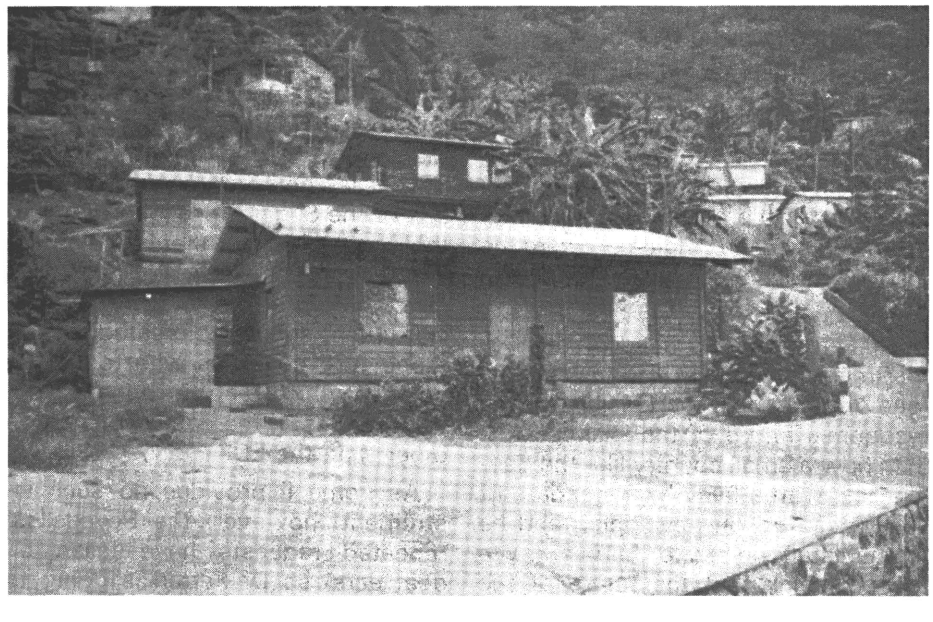
The EDF took part in the global programme to extend the facilities at the international airport on Mahé by financing the construction and fitting out of a meteorological station (worth ECU 150 000). This station, unfortunately, was badly damaged during the events of November 1981, when mercenaries attacked the airport, but 5th EDF emergency aid enabled the necessary repairs to be made.

The government has particularly appreciated the simplified administrative approach of the microproject programmes, having submitted four annual programmes totalling some ECU 380 000 for small rural infrastructure schemes (rural markets and roads on Mahé, Praslin and La Digue).

In addition to the indicative programme, the islands also received other aid under Lomé I — direct help from the EIB in the shape of participation (shares and the provision of risk capital worth ECU 620 000) in the Seychelles Development Bank.

And lastly, financing (ECU 24 000) has been provided for a CID study of the extraction of coconut oil and the production of gas from the shells.





These low-cost houses under construction (above) and now as they stand (below) were funded by the EDF

(1) From Commission's paper.

Cooperation under Lomé II (5th EDF)

The 5th EDF indicative programme, which was signed in April 1980, provided financial and technical aid of between ECU 3.2 m and 3.7 m, all of it as grants. This amount was divided as follows during the programming mission (see table 3):

— social infrastructure	75 %
— microprojects	17 %
— training	3 %
— reserve fund	5 %
	100 %

In August 1983, the final amount of the indicative programme—ECU 3.6 m grants—for the Seychelles was announced to the President of the Republic.

The most important project, one that was already clearly identified when the programming was done in April 1980, was the extension of Victoria Hospital. The financing decision (ECU 2.4 m), taken in June 1983, covers the building and fitting out of a medical and psychiatric centre and an intensive care ward which is part of an overall programme to build four medical wards in the existing hospital. The other sections are being financed by the African Development Bank, the Nigerian Trust Fund and a contribution from the Seychelles government itself.

A first programme of microprojects was signed in May 1983. It covers water supplies to two villages on Mahé and is worth ECU 164 000.

Two further microproject programmes, on small-scale fishing concerns, agriculture and alternative energy, are due to be adopted in the coming months.

Lastly, there are plans to run a multiannual training programme, aimed at completing the study grant scheme (ECU 96 000, already committed) during the course of 1984. The programme will be financed from the extra funds allocated when the size of the indicative programme was revised.

Cooperation outside the indicative programme

This includes two lots of emergency aid — ECU 40 000 in March 1981 to repair the roads and bridges damaged by floodwaters and ECU 200 000 in February 1982 to repair damage to the airport on Mahé by mercenaries in November 1981.

The EIB has also opened a line of credit (risk capital) of ECU 1 m to the Seychelles Development Bank to finance investments, three of which (the building of a printing shop, the purchasing of capital in a hotel promotion company and the construction of an inter-island ferryboat) have already been made.

Cooperation outside the Conventions

In 1978, the Seychelles received food aid of 335 t skimmed milk powder for distribution to children, old people, orphans, the disabled, the sick, prisoners etc.

The Community has also been involved in NGO projects, contributing to the construction and fitting out of a nursery in Victoria (ECU 10 000 approximately) and to laying on water supplies to various villages (ECU 85 000).

Regional cooperation

The Seychelles attaches great importance to the development of regional cooperation and it is, of course, on greater involvement in the region that the islands intend basing their future development. This is why they have been extremely active in identifying and taking part in EDF-financed regional studies and projects as well as in setting up the Indian Ocean Commission.

The regional programme under Lomé I and II

The Seychelles has benefited from all the regional cooperation schemes (see table), including those aimed at promoting trade (trade fairs).

Regional cooperation in the Indian Ocean was allocated ECU 20 m un-

Table 1
Summary of EEC-Seychelles cooperation, 1977-1983
(Financial resources provided for the Seychelles)

	ECU '000
1. Cooperation 1977-1980	
(a) Lomé Convention I	
— Indicative programme	2 500
— EIB, risk capital (shares etc.)	620
— CID, coconut study	24
	3 144
(b) Cooperation outside the Convention	
— Food aid	430
— NGO co-financing	10
	440
Total 1	**3 584**
2. Cooperation 1981-1985 (as of 30 June 1983)	
(a) Lomé Convention II	
— Indicative programme (final amount)	3 600
— Emergency aid	240
— EIB, risk capital (line of credit)	1 000
	4 840
(b) Cooperation outside the Convention	
— NGO co-financing	85
Total 2	**4 925**
Grand total (1+2)	**8 509**

Regional cooperation	4th EDF (ECU '000)	5th EDF (ECU '000)
— Telecommunications (air navigation aids)		
• studies	360	
• project	7 600	3 300
— Creation of a regional shipping company		
• study	141	
— Majunga regional centre for maritime studies		
• study	25	
• project		1 850
— Development of tuna fishing		
• study of an experimental project	32	
• detailed study	250	
— Training (at regional level) for the hotel trade		
• study	20	
— Seminar on regional cooperation in the Indian Ocean	90	
— ASCENA project (Madagascar)		(1 000)
Total:	8 518	6 150

der the 5th EDF and ECU 6 m of this has been committed to date. This amount may seem small, but the Seychelles obviously intends intensifying the regional cooperation schemes, particularly in the fishing industry and the tourist trade.

The ongoing study on the possibilities of developing tuna fishing in the Indian Ocean should lead to a vast regional project in the course of the year. The Seychelles has also applied for technical assistance with defining a regional tourist promotion and programming operation.

The Indian Ocean Commission

Various countries of the Indian Ocean (Seychelles, Madagascar and Mauritius), were keen on institutionalizing cooperation in the region and so they set up, in December 1982, the Indian Ocean Commission, of which they are so far the only members.

National experts met for the first time in May with instructions to define the privileged areas of regional cooperation—trade, transport, tourism, training and research—and to identify regional projects.

The European Community has indicated its willingness to support the work of the Indian Ocean Commission as far as possible, as it has done with other ACP regional organizations under Lomé.

EEC-Seychelles fishing agreement

In February 1983, the Seychelles asked for negotiations on an EEC-Seychelles fishing agreement to be started.

This agreement should cover the French tuna fleet as a result of the experimental campaign currently being run.

For the Seychelles, the development of new industrial fishing activities in the region should take place within a framework of joint development and it should lead to an increase in the islands' own fishing capacity. It should also mean that the port of Victoria, which is geographically extremely well-placed, should be developed as the regional base for the tuna industry.

The Seychelles and the Commission held exploratory talks on this subject in Victoria on 1-5 August and negotiations are scheduled to begin in Brussels in October.

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Table 2
Indicative programme, Lomé I (4th EDF)

ECU '000

Sectors & projects	Date of decision on financing	Amount	Total
1. *Economic and social infrastructure*			
— Public services site programme (1)	26.06.78	1 480	
— Meteorological station	14.07.78	150	
— Rural water supplies	02.10.78	260	
			1 890
2. *Microprojects*			
1st programme	25.06.78	102	
2nd programme	18.12.80	161	
3rd programme	18.02.82	75	
4th programme	19.05.83	41	
			379
3. Technical assistance		14	
4. Delegation costs and reserve fund (1)		90	
		127	
			231
Grand total (1+2+3)			**2 500**

(1) Part of the reserve fund was transferred to the "public services site programme" and part was used for technical assistance to Fideco.

Table 3
Indicative programme, Lomé II (5th EDF)

ECU '000

Sectors & projects	Forecasts		Commitments as of 6 June 1983	
	%	Amount	Date	Amount
1. *Social infrastructure*				
— Development of Victoria hospital	75	2 400	28.6.83	2 400
2. *Microprojects*				
— Annual programmes	17	544	19.5.83	164
3. *Training*				
— Training (advance)	3	96	31.5.83	96
4. *Reserve fund* (1)	5	560	—	—
Total	100	3 600		2 660

(1) Including the extra amount granted to the Seychelles when the final amount of the 5th EDF indicative programme was fixed.

"Organizing a society in which people can work together in cooperation for the good of all"

An interview with President Julius Nyerere

We carried a report on Tanzania in our last issue (pages 13 to 32). President Julius Nyerere, who rarely talks to journalists has, however, sent us this exclusive interview. Coming from a man who remains "one of the most prominent figures in African nationalism", it naturally constitutes an important complement to what has already been published.

▶ *What are the main principles of Tanzania's ujamaa?*

— The Swahili word ujamaa is used to describe our socialist goal and direction, and to indicate that we see it as a natural and organic growth from Tanzanian communal and extended family traditions—and indeed, to some extent, from current practice. It does not indicate any unique kind of socialism; simply the path we shall follow from where we are to where we want to reach. As we were a peasant and rural society, socialist practice, derived from the concepts of class conflict between the proletariat and the bourgeoisie, was of limited relevance to us. We embarked on the building of socialism before the development of capitalism.

Thus, the first principle of ujamaa is human equality. We are trying to become a socialist society, with our structures and the emphasis of our action having a form and an emphasis suitable for Tanzania's present and foreseeable economy and natural to our cultural background. But socialism has common principles everywhere. Thus, our purpose is that of organizing a society in which people can "work together in cooperation for the good of all". The Arusha Declaration says: "In a really socialist country no person exploits another; everyone who is physically able to work does so; every worker obtains a just return for the labour he performs, and the income derived from different types of work are not grossly divergent".

Part II of the Declaration has a section explaining that "the major means of production and exchange are under the control of the peasants and workers", that "true socialism cannot exist without democracy also existing in the society" and (fourthly) that "the successful implementation of socialist objectives depends very much upon the leaders, because socialism is a commitment to a particular system of living and it is difficult for leaders to promote its growth if they do not themselves accept it". As a consequence of this last point, we drew up the "leadership code", which makes a leadership position incompatible with, for example, ownership of shares in a private company, renting of property, or the employment of others in private business and revenue earning activities, etc.

Tanzania Information Service

President Julius Nyerere

"Rural development: a natural objective"

Our ujamaa philosophy leads, inevitably, in practice, to emphasis on rural development and to advance on a broad front, with a rejection of the "trickle down" theory of economic development. Rural development is a natural objective because about 85% of our people live and work in our rural areas; this does not necessarily make its practice easy for any government or economic machine. And we reject the "trickle down" theory because we believe it is morally wrong that the basic necessities of life for one person should depend for their attainment on the prior attainment of luxury by others. Further, we believe that even if it could be proved that economic growth was faster under a capitalist system (which seems to us to be unproven when a nation is not in a position to exploit the people of another nation), the resultant social disharmony and risk of social disorder would make that system both inappropriate to us and probably inviable in the long term.

▶ *Tanzania has been prominent in efforts to change the international economic system. Little progress has been made—what would you like to see happen to revive such efforts?*

— It is certainly true that little progress has been made in the struggle to build a more just and equitable international economic order. This is

one of the reasons for the current world economic crisis; the developed world cannot prosper when so large and important a proportion of its potential customers have been impoverished by built-in exploitation. Yet in historical terms — that is, if we could look at the current situation from the perspective of the year 2083—there has been one important change over the last 25 years. North-South relations, and a new international economic order, are now inescapably part of the world agenda.

A "change in the present international system"

The reaction of the rich and powerful countries to all proposals from the Group of 77 may continue for a while to be absolutely negative, as they were at UNCTAD VI. The ostrich is said to put its head in the sand when faced with danger, but the problem is not eliminated by that action.

The large debts of a few Third World countries still continue to endanger the present commercial banking system of the Western world; the grave dangers of social unrest and disorder in the many poorer countries (and especially the least developed) will continue to have implications for international peace and stability. Change will come. Sooner or later the developed nations will realize the need, in their own interests, to negotiate change in the present international system.

I would like to see the Third World countries recognize the power which, in unity, this situation gives to them. Separately we are helpless; individually we can be—and are—forced into actions which not only make our present position worse, but which also provide no basis for future advance. By acting together and standing together we can more effectively struggle against the imposition of further misery, exploitation and alien economic domination in the interests of the wealthy. For example, we should support any individual country which is being subjected to intense economic pressure when it is trying to defend its right to determine its own economic policies.

Further, the deliberate development of Third World trade, and of joint economic and social activities, is of very great importance. We must not allow this development to be dependent on intermediary mechanisms largely under the control of the developed world. For example, most poor Third World countries are short of foreign exchange, but by joint or regional exchanges based on a barter system, this constraint can sometimes be overcome. Again, while our economies are too often competitive rather than complementary, there is quite frequently the possibility of coordinating the planning of future development so as to facilitate common progress. This kind of intra-Third World economic cooperation is developing, but too slowly. I believe that if we gave it as much attention and emphasis as we have been accustomed to devoting to North-South economic relations, we would be simultaneously helping to ease slightly our current problems and strengthening the economic South for its future negotiations with the North.

▶ *Has too much emphasis been put on the structure of agriculture and not enough on incentives in Tanzania? What is the government proposing to do to encourage food production?*

— Except for some large sisal estates and a very small number of commercial coffee, tea and mixed farms, Tanzanian agriculture has always been based on technologically very backward peasant production. The farm implements were—and indeed to a large extent still are—the hand hoe, the panga and the small axe. The farming system was that of shifting agriculture—i.e. cultivating for a year or two and then abandoning that plot to the bush when its fertility declined. The system and the tools were thus inherently inefficient, and viable even at subsistence level only while the population was living in scattered homesteads and kept low by a high mortality rate.

If there was to be any prospect for economic and social development, this structure had to be changed. The policy of villagization therefore brought our people together in communities which could be served by a primary school, clean water and a basic health service centre such as a dispensary. In practice, when the villages were being established, too much emphasis was sometimes given to the size, which was best for the provision of these social services, and not enough to the demands of maximizing agricultural production; where it is necessary we are trying to correct these mistakes so as to reduce the distance between the shamba and the home.

But also in practice (and contrary to myth) farming was not "collectivized" in the new villages. The predominant mode of production has continued to be the private peasant holding, although almost all villages also have a "villlage farm". This is either run by the village government or owned cooperatively by a voluntary group of the peasants who get the proceeds from it. The form of this village farm, and its size, is democratically determined by each village; it varies very greatly from one place to another. Our party does seek to encourage each village to have a village farm of at least 100 hectares, the proceeds from which will help to pay for village activities and development, but only a minority of village farms are yet as large as this.

Inevitably such re-locating has its short term costs, but taking the country as a whole these were only significant for quantity of output in relation to the production of cashewnuts. The real constraint on increased output commensurate with the growing population and urban economy has come from our failure to move fast enough from the use of hand implements to animal-drawn or other intermediate power tools, and to better seeds and/or cultivation practices.

Production incentives have to be considered in the context of the society in which they are being applied, and even in the context of the world economy. The prices of Tanzania's agricultural exports have gone down in relation to the costs of its imports—the capital goods and raw materials on which local manufacturing and even modernized agricultural production depend. Yet it is goods which the farmers want, not money. And about 85% of Tanzania's population live in the rural areas; they cannot be completely protected from the fall in our national income which has occurred during the last three or four years, any more than they can be defended against the effects of

drought, flooding, and other natural or political disasters (such as the Amin war) which have hit Tanzania since 1977. The government, through its pricing and tax policies, and through the pattern of its expenditures, has tried to reduce the burden on the rural areas as much as possible, and certainly the welfare of working people in the urban areas has worsened relative to that of rural dwellers. But in a period of world recession, foreign exchange shortage and domestic inflation, it is not possible for an agriculturally dependent country to give positive "incentives" to farmers, however much the government might wish to do so. Tanzania does try; the annual fixed prices set for the most important food and export crops have now for a number of years been increased at, or in most cases above, the estimated level of inflation.

Tanzania has always produced the bulk of its own food, but its dependence on primitive tools and rainfed agriculture, and the growth in population, have meant that the increased food output is not proportionate to the rise in the population. The government's endeavours to improve agricultural methods and the availability of better seeds and tools are expected to have an effect on all output. The recent policy statement will help to ensure that it is everywhere worth the peasant's while to invest in improved fertility in the land he is working; government differential pricing policy is designed to encourage food crops most appropriate to different ecological areas; reforms in the marketing system should reduce distribution and credit rigidities while safeguarding the development of a national food strategic reserve; and many other reforms are being made. It is, however, too early to judge the changes made in the very recent reassessment of national policies in relation to agriculture.

▶ *What did you mean by saying that the most serious internal problem was "the failure at all levels to understand the practice and principles of self-reliance"? How do the government and the Chama party plan to reverse the situation?*

— Traditionally our villages, and even our exended families, lived and worked on a basis of self-reliance. During the independence struggle the nationalist movement aroused the people to a wider consciousness of what they could themselves achieve by their own activities. Thus it was the people's efforts, led by TANU, which led to Tanganyika's independence in December 1961 (and Zanzibar's independence 2 years later). It was also the TANU Youth League and the Tanganyika Parents' Association (set up by TANU) which began self-help adult literacy classes and "bush-schools" for the young children etc.

UNESCO – Schwab E.

The backbone of the Tanzanian society: the village community

After independence there was a tremendous upsurge of these "self-help" activities. Schools, dispensaries, community centres and other buildings were erected by the people themselves all over the country; so much so that it became necessary to try to introduce greater planning into these spontaneous efforts, because teachers, medical personnel and drugs, etc., could not be supplied to provide service in the new buildings! This kind of work, however, still continues. Even if the government now often helps by providing the tin roof, or the cement, or the craftsman for a village school, etc., it is very rarely that the villagers do not themselves provide the bulk of the labour and a proportion of the costs. Indeed it is only because of this continued "self-reliance activity" that universal primary education has become possible, that 75% of our villages have a shop, 40% of the rural people have an easily accessible clean water supply, and that most of them have a basic health facility available within five kilometres.

Yet our ambitions have grown much larger; many of the services needed for a decent life in our villages, and for modernized agriculture, better roads, etc., require a level of technical expertise and an input of capital which is not commonly available within the villages, and is often not available—or available in sufficient quantities—within the country.

This is a fact of life, of our underdevelopment. And with this fact has come the tendency of leadership to down-play the importance and the relevance of what we can do for ourselves as they compare the result with the sophistication of other countries' manufactures offered for sale—or on credit. It becomes a case of "the best" (judged in international terms) being the enemy of "the good". Those leaders who advocate carts or animal-drawn ploughs then find themselves accused of trying to "hold our country back". And the villager who wants one of these articles finds them so difficult to obtain that he is often forced to continue carrying goods on his head and cultivating with the hand-hoe.

We are moving in the right direction

In the quotation you referred to, I was referring to the widespread results of this leadership attitude. But the first need, if a movement is to be reversed, is to recognize it! This is happening. Over the last three to four years, the ever-increasing shortage of foreign exchange and all the goods which depend on it, and the shortage even of public credit, is now having some effect—at all levels. Government and party officials are becoming more realistic in drawing up national plans and in the type of things they are encouraging the villages to plan and work for. The villagers and the urban workers are themselves more confident and more vocal in pressing their demands for goods which are relevant to their needs.

Thus we are at last taking seriously what are often called "intermediate technology" methods, for example, by encouraging and helping with the provision of simple animal-powered agricultural tools, the local making of soap, the development of local pottery, the use of bricks and tiles for building, etc. We have much more to do; not everyone is yet converted to a realization that for us the "best" will often be quite different

technically from what it is for a developed society. And we are now handicapped in promoting this change because there is, generally speaking, no mechanical tradition in our villages, and because even the simplest tools usually have some small import content even if it is only scrap iron—and the amount of anything which we can buy from abroad decreases year by year. However, we are and we will be moving from now on in the right direction.

▶ *Why was TANU transformed into Chama cha Mapinduzi and how in practice do the government and Chama work together?*

— Although the United Republic of Tanzania has legally been a one-party state since 1965, in practice we had two parties until 1977—TANU on the mainland and ASP in Zanzibar. The two were merged into CCM in that year by the voluntary decision of both parties and after a joint commission had worked out a common statement of aims, structure, and constitution.

The principles of our social, political and economic advance and policies are determined by the party, which is "supreme". The government "executes". Thus, for example, it is the party which has set out the socialist commitment of Tanzania and defined it in the Arusha Declaration. The party said this means public ownership of the major means of production and exchange. But the government decided when, in what form and on what terms to bring into public hands the banks, insurance, the major industries, etc., and it draws up plans for future development within the framework of priorities set by the party. As another example, it was the party which said in 1973 that universal primary education must be effected within three years; it was the government, in cooperation with the people in the villages, which planned and tried to provide the extra teachers and equipment. The party helped to mobilize the people to participate in building classrooms, etc.

The government thus carries out party general directives and also regularly reports to the party on progress and problems. The government is therefore subject to criticism as well as prodding from the party, which is intended to act as the people's "watchdog" on government activities as well as being responsible for determining general policy. This is true at national, regional, district and village or ward level. The party machinery is not supposed to interfere in government decision-making or execution; but it is supposed to check against abuse of office, local petty tyranny or disregard of the people's wishes in the execution of a policy, etc.

In practice, of course, things do not work out so smoothly or so neatly. So as to build or strengthen united and mass action, party secretaries at divisional, district and regional levels have, until recently, been the same person as the senior government official at that level. A party member or a citizen wishing to complain to the party about the actions of the government or a government official thus sometimes found himself complaining to the person who was responsible for the action in the first place! This is now being changed. We now have regional party secretaries (who are elected members of the National Executive Committee) and regional commissioners who yield government powers in the regions and execute government decisions. If the regions are to make progress, these two senior people will need to work closely and harmoniously together. The party secretary will have the job of mobilizing the people for national and party activities; the regional commissioner will control the government machinery including its coercive powers like the police.

East Africa

▶ *What future do you see for economic cooperation in East Africa in the light of the breakdown of the East African Community?*

— The break-up of the East African Community was a terrible thing for Africa, for East Africa and for Tanzania. But it cannot be allowed to preclude future East African cooperation. As soon as final agreement has been reached on the division of EAC assets and liabilities between Kenya, Uganda and Tanzania, we shall begin to work out new forms of cooperation for our mutual benefit. There is scope for a great deal of trade, of joint research and coordinated development programmes, as well as more directly political cooperation. We are confident that the final clearing up of the ruins of the old community will be effected soon, and political relations between the three countries are now once again good.

Lome: some difficulties but "a useful forum and and useful institutions"

▶ *Are you happy with Tanzania's relationship with multilateral organizations, such as the EEC, involved in supporting your country's development efforts?*

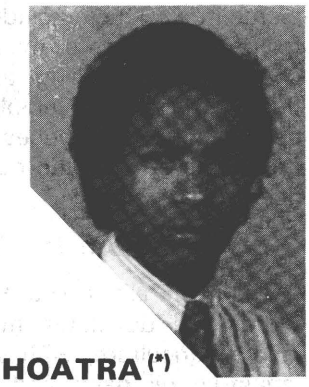
— We have had very important economic assistance from the World Bank, the EEC and other international bodies, and we appreciate it. As far as the EEC is concerned, we do also have some problems which are likely to be the subject of further ACP-EEC discussions, especially in the context of a possible Lomé III.

In particular the procedures for negotiating a cooperation project are almost incredibly cumbersome, slow and rigid; the same applies to financial disbursements after agreement is reached. This reduces the value of economic assistance, especially at times of inflation. Again, the quantities of money available in the EDF and in Stabex are inadequate in relation to the great need; I am told that claims for compensation under Stabex were double the available budgetted resources in 1980 and four times the budget for 1981! Finally, if the Lomé agreement is intended to be of mutual benefit and to play a constructive role in the development of the Third World countries, it is unfortunate that the ACP trade deficit with EEC countries, which amounted to about $2000 m in 1975, had increased to nearly $5000 m by 1980 and is still going up.

We hope that the EEC will be able to approach these questions sympathetically and constructively as they are raised at our different ACP-EEC discussions. For the Lomé agreements establish a useful forum and useful institutions as part of the necessary North-South dialogue leading to change in the international economic order. o

Interview by
IAN PIPER

President Ratsiraka is satisfied with aid from the EEC



by
Arsène
RALAIMIHOATRA (*)

All is well between Antananarivo and Brussels. This, at least, is what emerged from the lightning visit development commissioner Edgard Pisani paid to the Malagasy capital on 21 July 1983.

Only a few hours after touchdown at Ivato airport, Mr Pisani was received by President Didier Ratsiraka. The occasion was an opportunity for the Malagasy government to express satisfaction with EEC development aid for the island. This was done by the President himself, who, of course, also expressed a certain amount of criticism.

This was not unfavourably received by the development commissioner, for whom dialogue of this sort is a vital aspect of the structure and the philosophy of the Lomé Convention—the very foundation of the agreement between the Ten and the 63 countries of Africa, the Caribbean and the Pacific.

The two men parted with the clear impression that an even better relationship was going to be established between Madagascar and the EEC, because President Didier Ratsiraka seems to expect more from the Ten, not just for his own country, but for the ACP group as a whole, now that the much talked about Pisani memorandum has been published in Brussels.

Madagascar has its winter, true, but the cloudless sky and the pleasant weather have nothing in common with the more or less permanent grey sky over Brussels and Edgard Pisani settled in very easily, particularly since the general climate of the negotiations was "sunny" throughout. Didier Ratsiraka at a press conference expressed how satisfied he was with the aid the Community was giving to Madagascar. Over the past 20 years, the island has received aid amounting to ECU 375 million including ECU 73 m under the 5th EDF (Lomé II) and there have been emergency aid, Stabex transfers and food aid in addition.

The help Grande Ile has received is by no means negligible and it has enabled an ambitious development programme to be set up. In the Charter of the socialist revolution, Madagascar goes for an all-embracing external policy and the relations, the island has with Eastern Europe and the 10 countries of the Common Market (both bilateral and multilateral) are paying off. But the President does not intend to stop there. Not only did he pay tribute to his European partners—he said he hoped the Community countries would do even more.

"What struck me and perhaps touched me the most", Edgard Pisani told the press before he left Antananarivo," is the tribute your President paid to cooperation with the EEC and the spirit in which he discussed the future of this cooperation."

(1) ECU 78 m by 24 August 1983.

Edgard Pisani meets President Didier Ratsiraka

With reason, Didier Ratsiraka told Edgard Pisani that "there is no such thing as perfection in this world, but...", and "the main lines of the Pisani memorandum are highly satisfactory, but..." And the buts led on to specific suggestions, including, for example, a change in the way Stabex is applied. Why cannot the system be used for certain imported products and input, those raw materials and spare parts which are lacking in these times of international crisis when foreign exchange is in short supply, constituting a problem for Madagascar, where one or two operations, even one-off ones, would be enough to get the economy off the ground again? In short, why not have a Stabex which the ACP countries are free to use as they see fit, rather than such a rigorous system?

One of the suggestions the President made to his European guest reflects his desire to see a fair distribution of available resources and not to have certain countries privileged because they are more advanced or have adopted a particular political system.

Madagascar was also in favour of the Ten's next offensive in the food self-sufficiency policy it intends running *vis-à-vis* its ACP partners. And better than this, Didier Ratsiraka asked Edgard Pisani to see that Madagascar is included in the five test-case countries where the operation is shortly to be launched. "We have assets", said the President, "and I think the test will be a successful one".

In this country, where agriculture is considered to be the basis of the economy, industry its driving force (page 50 of the Charter of the socialist revolution), a certain number of practical schemes are now being im-

(*) The author writes for *Madagascar Matin*.

plemented. They include subsidies for peasant farmers, the gradual mechanization of farming, the construction of major fertilizer plants, the liberalization of the prices paid to the producers and by the consumers of rice etc.

Aid from the Ten

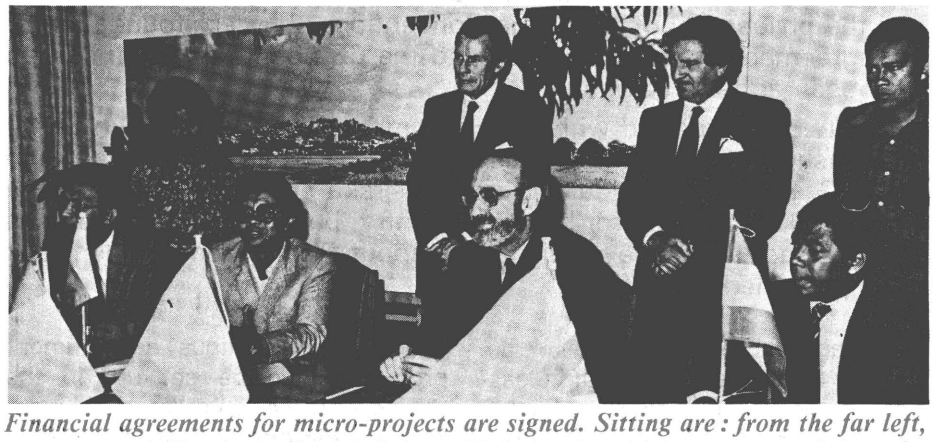
The Ten are doing their bit towards the development of the island's agriculture, with schemes for industrial oil palm and tea plantations, the diversification of integrated development and more. The rural world is also getting the benefit of micro-projects and micro-water engineering schemes (2), that host of small operations (with far-reaching effects) in which the Community backs up the efforts of the government and the decentralized communities.

The government is not the only one satisfied with Community assistance. Public opinion in general is very much in favour, in view of the fact that it shows immediately productive and useful results. So on the strength of this appreciation. Mr Pisani assured President Ratsiraka that "the reality of Madagascar" would be taken into account in the forthcoming EDF indicative programme, the sixth of its kind.

The development commissioner clearly touched on something dear to the President's heart when he discussed regional cooperation, this being a sector in which the Indian Ocean area has benefited (ECU 15-20 m under Lomé II for joint projects involving telecommunications for shipping, the security of air navigation etc.). This regional cooperation is a form of South-South cooperation, as we know, and it is of great importance to President Ratsiraka, who has championed its advantages when it comes to coping with the interminable North-South dialogue ever since the non-aligned summit in Havana. Where has South-South cooperation got? Not far, alas!

So, here again, the Community's action has been of great interest to Ratsiraka—even though, Brussels' willingness not withstanding, things still tend to drag. But regional cooperation is surely one of the realities of Europe today. People from the Common Market move around member countries in Europe with nothing more than an identity card. They have no need for a passport. And there is no duty to pay on their respective manufactures either. There is talk of butter and the common agricultural policy, it is true. Business is business after all, but they often manage to find compromise solutions.

There are imperfections, of course, as there always will be. President Ratsiraka mentioned them and Mr Pisani said he anticipated difficult negotiations in Brussels in the autumn, particularly when the Community and the 63 ACP states hold their talks on renewal of their "marriage" contract in 1985. This new contract will not necessarily be called Lomé III, as the name will depend on the capital city in which the agreement is signed. The negotiations will be set against the sombre background of the international crisis. And, reasonably enough, "there will be many speeches and many discussions, but something positive is bound to come out of it", Edgard Pisani predicted. So the EEC-ACP association will, we hope, be able to do what UNCTAD VI failed to do in Belgrade and show the world just what cooperation between industrialized and developing countries can be. It will be difficult, of course, but you can't make an omelette without breaking eggs.



Financial agreements for micro-projects are signed. Sitting are: from the far left, Madagascar's Foreign Affairs Minister Christian Rémi Richard, the Minister for Economy and Finance, Pascal Rakotomavo, Edgard Pisani and Etienne Ralefa, the head of micro-project operations. Standing behind are Charles N. Pellas, the Commission delegate, and Giovanni Livi, the EEC director responsible for East Africa, Southern Africa and the Indian Ocean

The European commissioner told the press that, as things stood, the North-South dialogue was in fact a West-South dialogue, as the countries of the Eastern bloc did not feel any involvement in the development problems of the Third World. This was all the more surprising—and regrettable—given that the "iron curtain" countries were forever saying that the present economic crisis is a crisis of capitalism.

The Lomé Convention between the ten countries of Western Europe, and of the 63 countries of Africa, the Caribbean and the Pacific is a fine example of North-South cooperation. When will COMECON get so many countries with differing socio-economic policies together? And does not the Common Market, as such, have multilateral relations with the countries of Latin America, the Arab world and even certain parts of the Eastern bloc, in addition to the ACP group?

All in all, then, the Ratsiraka-Pisani meeting was a great success. Madagascar's head of state was his usual candid self when he stated, categorically: "I wonder whether the industrialized world in general and the Community countries in particular are really aware of the fact that, if the developing countries, the ACP group, remain behind in the stone age, there is no future for them". This echoes Pisani's words: "Cooperation with the developing countries is an integral part of our policy and an economic necessity as well."

o A. S.

(2) Edgard Pisani and Pascal Rakomotavo, Minister for Economy and Finance and national authorizing officer for the EDF, signed documents relating to the 1983 micro-project operations. The Community contribution to this host of small, local schemes amounts to ECU 1 017 000 and state and local authorities are involved too. This is an extremely effective example of tripartite cooperation.

The CID 1982 Annual Report

The CID has just published its annual report for 1982. Below are extracts of some of the main aspects of the report.

The basic emphasis during 1982

Throughout the year, the CID's policy was to emphasize the development of project proposals in the ACP countries and to concentrate specifically on promotion meetings to get joint venture discussions started. At the same time, much effort was made to generate technical assistance projects, with particularly successful results in in-plant training.

Obstacles encountered

The CID's technical and contact-creating work and provision of technical expertise and training for existing industries went ahead without major difficulty. The deterioration in the world economic situation, however, has become an almost insurmountable obstacle for the majority of the least developed ACP countries in starting up new productive investments. Foreign exchange problems, devaluations (which disrupted previous financial predictions) and changes of policy towards agriculture reduced the priority of industry.The availability of local finance can even present a problem. The outlook for redeploying EEC industries into ACP states by joint ventures remains a sensitive issue, due to the present employment situation in Europe. To counteract this, the CID has only limited technical assistance funds and its projects have no specific access to risk capital or soft loans.

Cooperation with the Commission and the EIB

Cooperation between the CID and these European institutions is most useful in many areas. Although there is no formal agreement to specify to what extent the CID can make use of the Commission's services, it is receiving considerable general support, particularly in its activities in the field, although no direct assistance is given in generating or following up projects.

In the case of the EIB, cooperation is still limited to comparatively few large projects having a promoter and country that are acceptable to the Bank.

The Advisory Council

The CID's Advisory Council held three meetings in 1982 (in April, September and December). During these meetings, it discussed the 1982 annual report, the activity report for the first six months of 1982, the work programme and budget proposals for 1983 and the operational policy of CID activities.

The Advisory Council requested the CID to prepare a paper on post-Lomé II ideas. This paper has been re-edited and submitted to the Commission and the Committee on Industrial Cooperation. The paper highlights the limitation of funds available for CID in comparison with the tasks to be executed and suggests that much more technical assistance funds have to be made available for projects to be implemented, particularly in the least developed countries...

The volume of assistance

The total number of project interventions where CID assisted with a financial or other essential in-house input was 45 in 1980, rising to 103 in 1981 and to 228 in 1982. This is due to a significant increase in the activities of:

— project substantiation in ACP countries;
— travel assistance to project sponsors;
— in-plant (255 persons in 33 projects) and in-CID training;
— expert and implementation assistance (diagnoses of 33 ACP enterprises);
— feasibility and market studies.

The latter, however, only increased from 21 to 24 in number. The CID is very critical in accepting studies, doing so normally only when there are two joint venture partners who are prepared to make an investment if the study proves positive, and who will themselves participate in the study costs.

... A number of publications were issued, introducing various operational services offered by the Centre. The bi-monthly Industrial Opportunities, published in "The Courier", was revamped and given wider circulation...

Concrete results

Seven enterprises entered production during the year as a result of CID's assistance. This figure is higher than any previously attained. There was also an overall total of 15 projects under implementation.

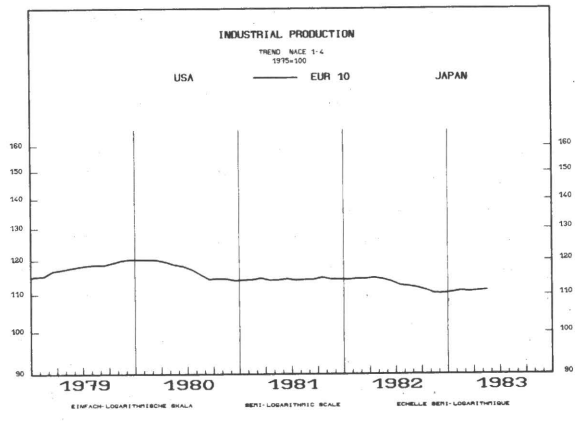
When it is realized that it is only a year and a half since CID increased its promotional activities, one cannot expect that these results should have increased significantly. When one adds the fact that CID's assistance funds or ability to create access to risk capital for many ACP countries are most limited, it becomes obvious that the economic situation at present will keep these figures low, and furthermore, the increase in technical assistance plus training projects from 28 in 1981 to 66 in 1982 will have produced other concrete results difficult to measure.

One may then ask, under these conditions, what is the value of CID's promotion services? (Ind. project substantiation plus travel incentive projects increased from 54 projects in 1981 to 138 in 1982).

For the implementation of any industry in developing countries, one must take the long-term view that it may be at least 2-3 years or even 5-6 years under present economic conditions, from the day of conception to the day an ACP industry is successfully established. It is hoped that the world economic situation may start to improve during 1983, and show real growth in 1984. The CID's promotional activities in 1982 may therefore result in projects becoming ready at a time when the economic climate would be more conducive to investment.

The basic function of the CID in promoting joint ventures is certainly being undertaken in the face of both external and internal constraints. Some easing of these constraints is also bound to lead to even more concrete results. o

Facts and figures



Industrial production trends in the Community in 1982-1983

In September 1983 most economists and decision-makers in Europe would, alas, be hard put to find any signs of an upswing in industrial production.

At the end of 1982—a year which saw industrial production fall by 1.7%—many experts were making fairly optimistic forecasts, thinking that the upswing in 1983 was a virtual certainty. The figures for the first six months of 1983 have proved them wrong.

The Community has not managed to emulate the good performances by Japan and particularly by the United States, where the indicator shows an increase in production of 4.2%. Industrial production in the Community over the first six months of 1983 was 2.8% down on the corresponding period in 1982 and was no higher than in the second half of 1982.

The only chance of production in 1983 reaching the same level as in 1982 would thus be a substantial improvement in the second half of the year. o

Social security in the Community

Safeguarding the well-being of their citizens is a priority task for all the governments of the Community. The seriousness with which they approach this matter is reflected in the growth in appropriations allocated to social security expenditure, in other words payments to cover sickness expenses, retirement pensions, family allowances and unemployment pay.

In 1981 social security expenditure (benefit payments, administrative costs and other current expenditure) represented 27.1% of the Community's Gross Domestic Product, compared with 19.3% in 1970.

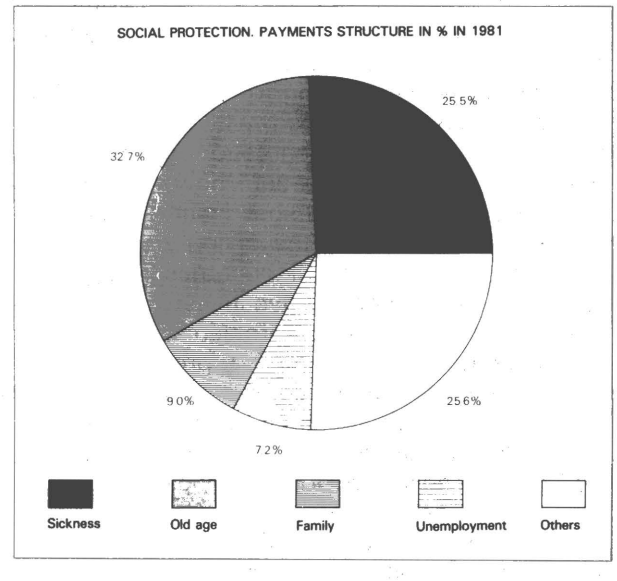
Per capita benefit payments have more than doubled in six years. In 1981 32.8% of this expenditure went to provide for retirement pensions, 25.5% was allocated to sickness insurance, 9% was for family allowances and 7.1% went on unemployment pay. In recent years, moreover, the proportion accounted for by this latter category of expenditure has increased considerably.

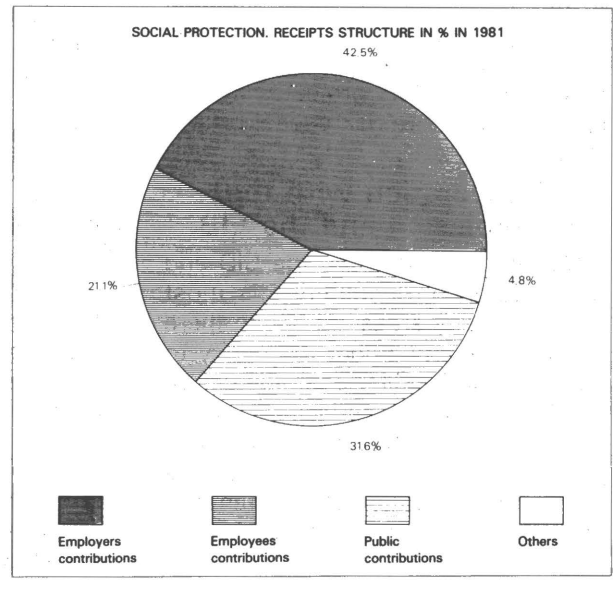
The items of income on which social security cover in the Community is based are of three sorts: social security contributions from employers and employees, current public taxation and other current income.

Between 1975 and 1981 the proportion of employers' contributions was reduced from 48.3% to 42.5% of the total and the proportion of other current income fell from 4.9% to 4.8%.

Employees' contributions, on the other hand, rose from 19.9% in 1975 to 21.1% in 1981, and the proportion of public taxation went up from 26.9% in 1975 to 31.6% in 1981.

Clearly, therefore, the growth in social security in Community Europe has been based on an increase in employees' own contributions and, above all, on the share of public taxation, whereas employers have had the benefit of a considerable reduction in their share of the burden, which ought to help them in their attempts to overcome the economic crisis. o





Towards more effective investments in development

by J. LEECH (*)

1983 has brought the tenth anniversary of the first enlargement of the European Community with the inclusion in 1973 of Britain, Denmark and Ireland. Overseas, that led to the 19 members of the Yaoundé Convention growing into the formidable body of over 60 African, Caribbean and Pacific partners of the EEC within the present Lomé Convention.

On 6 June this year, another tenth anniversary was celebrated at a meeting in Brussels of the chief executives of the Interact Group. This group represents the public bodies in, and of, the EEC concerned with investment in the developing world alongside their respective aid programmes.

Early in 1973, mindful of the potential effects of Britain's accession to the EEC and that still to come in 1975 to the European Development Fund, they had met in London at the invitation of the UK's Commonwealth Development Corporation (CDC). Here they established, not an organization but a joint working group which was to give shape to their cooperation. Anonymously entitled the Interact Group, it has remained like that to this day, a club rather than an institution. Yet its six-monthly meetings have produced substantial results for the developing countries in which they work.

Each of its members was created by its government, and the European Investment Bank by those of the Community as a whole, to support the growth of the productive sector in developing countries. They do this by identifying and helping to sponsor viable projects and providing risk capital and long-term loans. They ensure that qualified management is available and help to bring together suitable partners from developed and developing countries. Together they channel some US $2 400 million of new investment into the poorer countries each year.

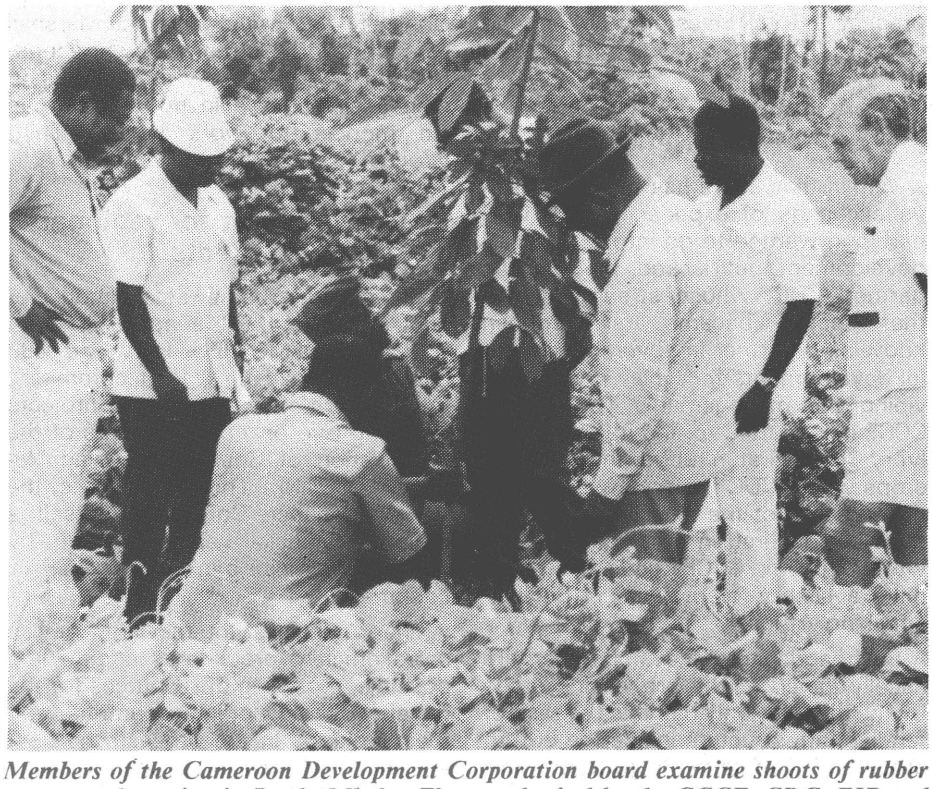
These bodies have been created at different times and by governments (British, Belgian, Danish, Dutch, French and German) with widely differing relationships overseas. Some, like the German Finance Company for Investments in developing countries (DEG), the Danish Industrialization Fund for developing countries (IFU), the Netherlands Development Finance Company (FMO) and the Société Belge d'Investissement International (SBI), believe that investment is best served by associating know-how from Europe with enterprises in the developing world. Others, like the French Caisse Centrale de Coopération Economique (CCCE), Germany's Kreditanstalt für Wiederaufbau (KfW) and CDC itself, are concerned more with the project than the sponsor. In consequence, the former tend to be more heavily involved in industry and the private sector, the latter also in agriculture and the public sector. The subsequent profiles of each of the seven bilateral institutions explain their purposes, funding and the services they provide; those of the European Investment Bank are already well enough known.

There are clearly differences in the methods governments choose to fund these bodies, the consequent terms on which they may invest, and the areas in which they can operate. Within those prescriptions, Interact cooperation is designed to harmonize their procedures so that more and more co-financing can readily be brought to bear on projects which inflation is putting beyond the capacity of them singly.

Cooperation started already in the early 1960s with joint support for development finance companies set up in different countries to assist smaller projects than could be reached by international agencies directly. In East Africa the pattern was for two or three of the agencies to join the National Development Corporation in an equal partnership, establishing compact and well-functioning local financial institutions. Elsewhere, the pattern was to attract smaller contributions from a wider body of outside shareholders.

Widening cooperation

Over the years, these partnerships have become more extensive. Latest examples are the Industrial Promotion and Development Co of Bangladesh (CDC, DEG) and the Sudan Rural Development Finance Co Ltd (CCCE, CDC, DEG). CCCE, DEG, FMO and KfW are shareholders in Banque Rwandaise de Développement; the Société Financière de Développement in Zaire has an almost similar complement, with the Eu-



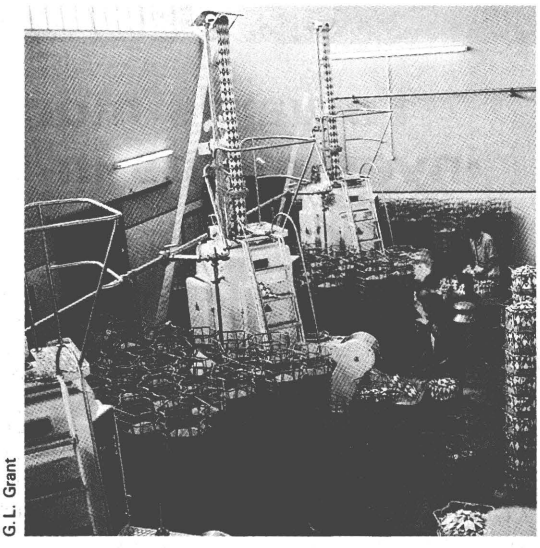
Camder

Members of the Cameroon Development Corporation board examine shoots of rubber at a new plantation in Penda Mboko. They are backed by the CCCE, CDC, EIB and EDF under Interact cooperation

(*) Head of external relations, Commonwealth Development Corporation.

G. L. Grant

Plucking tea on Tole estate in Cameroon—the product of development work assisted by several Interact Group members



G. L. Grant

The CDC, DEG, EIB and FMO jointly support the Tanzania Development Finance C° Ltd, which in turn gives financial backing for this milk packaging business in Dar es Salaam

ropean Investment Bank (EIB) in place of FMO but also SBI as lenders. CDC, DEG, FMO and others are currently in discussion with the government of Zimbabwe aimed at the setting up of a new development bank in that country.

Today, that cooperation has widened to virtually all productive sectors. There are now 156 projects financed jointly by two or more of the group's members. These range from mining in Papua New Guinea to oil palms in Ecuador, from cement in Indonesia to energy in the Ivory Coast. All that may represent a total investment of around US $ 1 500 m.

A massive exchange of experience

Within that, there has been a massive exchange of experience. The DEG had long wanted to go into agricultural development but lacked the German partner. CDC, whose strength lies in that sector, became its European know-how partner in several agricultural developments for which it was providing the management. The French CCCE helped CDC to find its feet in the Ivory Coast, first in rubber then in other crops where CDC has meanwhile introduced some of the smallholder techniques it pioneered in other parts of the world. In turn, CCCE funds are becoming available for projects in English-speaking Africa.

Such agricultural developments are usually joined at the processing stage by the EIB. Not only has this the task of funding infrastructure inside the EC but around 12 % of its funds go to the African, Caribbean and Pacific members of the Lomé Convention and to associated Mediterranean countries. Many of the projects it has undertaken with its Interact partners are in energy, spanning the globe from Fiji to Cameroon and Barbados. They have helped countries to break their dependence on imported fuels by making use of hydro, geothermal and other indigenous resources.

Technical capabilities have also been shared between Interact members, and not only in the field. Under an agreement with the KfW, CDC provides or procures agricultural experts skilled in a variety of crops and their processing. Originally set up to channel Marshall Plan funds into Germany's own reconstruction, KfW has now naturally assumed a similar role in putting German aid monies to work in the Third World.

Joint support for regional projects

Outside the Lomé association but still with some EC support, Interact (CDC, DEG, FMO, IFU, KfW and SBI) has recently set up a joint committee for the promotion of regional projects involving two or more members of the Association of South-East Asian Nations (ASEAN). Their partner is the ASEAN Finance Corporation, itself a regional financial vehicle set up by most of the major banks in the ASEAN countries.

The rationale of Interact is to devise more efficient procedures and, where possible, a pooling of resources for the benefit of developing countries and their projects. In the process the best and most effective practices are becoming adopted more widely. Although Interact members deliberately set great store by the informal nature of their collaboration, many developing countries are now seeing the transfer of new concepts of promoting development, whilst projects are increasingly finding the benefit of streamlined co-financing procedures.

Not all EEC countries have as yet created similar institutions. Contacts are, however, maintained with governments and other bodies, especially in Italy, so that Interact can be in a position to place its experience at their disposal if required.

The Brussels meeting had before it the reports of eight special working groups which regularly review specific operational aspects such as energy and new technologies, agriculture and food crops, and financial management. Much attention was clearly given to actions which could assist especially the countries under economic stress, whether for financial or climatic reasons. Above all, however, it is the problems of projects which are affected by these factors or by low prices for the commodities they produce which will have benefited from the collective approach at this meeting.

For the developing countries, then, the Interact group is a means of making what help is available more effective. For the European Community it is one more proof that the Ten, acting in concert, can achieve more than the sum of their individual efforts. Whilst Interact is not a Community instrument it is an example of how European inspirations can bring quite profound benefits to those in need not only of money but of help in gaining a livelihood and real independence. o J. L.

(See also pp. 33-35).

UNITED KINGDOM

COMMONWEALTH DEVELOPMENT CORPORATION (CDC)

Status: *Public corporation established by Act of the British Parliament in 1948.*

Purpose: *to assist overseas countries in the development of their economies.*

Funding: *substantially from interest-bearing Exchequer borrowings and self-generated funds. CDC is currently authorized to borrow in total up to £750 m.*

Operations: *Investment directly in productive and revenue-earning enterprises capable of servicing their capital; alone or in partnership with governments/statutory authorities, private interests or other development agencies. Investments are considered as appropriate projects come forward and not on the basis of country allocations.*

Type of finance: *equity and/or long-term loans with maturities ranging from 7 to 20 years and at rates at or below those of the World Bank or IFC depending upon the project; minimum investment £1 m.*

Sectors (in order of priority): *agriculture, forestry, livestock (main priority is given to this sector, especially where substantial numbers of small farmers can be associated)*
Industry
Public utilities (gas, water, electricity)
Minerals
Housing
Transport, tourism (in special circumstances)

Area of operations: *Commonwealth countries which have achieved independence since 1948, British dependencies and, with ministerial approval, any other developing country including certain non-Commonwealth countries. Emphasis is given to the poorer countries.*

Organization: *operations are conducted through five regional offices (Asia, Pacific islands and East, central and southern Africa) and twelve representative offices covering in addition West Africa and the Caribbean and Latin America.*

Project management: *CDC is able to provide the initial project management in certain sectors where it is qualified to do so, especially for large agricultural enterprises, development finance companies, housing companies, etc.*

Procurement: *CDC finances projects and not individual contracts. Its funds are not tied to British promoters or procurement but projects are required to ensure that British suppliers of goods and services have a fair and equal opportunity to compete for resulting contracts.*

Services available: *support for investors with long-term finance, particularly equity provision of project finance covering both offshore and local costs*
Presence in and knowledge of some 50 developing countries
Project identification, financing, management and monitoring capacity
Specialist departments for agriculture, engineering, marketing, supplies and personnel recruitment.

33, Hill Street, London W1A 3AR
Tel.: 01-629 8484
Telex: 21431/25849

BELGIUM

Belgian Corporation for International Investment

SOCIETE BELGE D'INVESTISSEMENT INTERNATIONAL - SBI

Status: *semi-public corporation established in 1971 as a limited liability company. Its capital is subscribed as to 56% by the Belgian National Investment Corporation (Société Nationale d'Investissement - SNI), 6% by the National Bank and 38% by large banks and other enterprises from the Belgian private sector.*

Purpose: *to participate in the long-term financing of foreign ventures fostering economic relations between Belgium and the countries concerned.*

Funding: *equity of BFr 1 million; long-term credit lines from financial shareholders.*

Operations: *SBI participates in the financing of enterprises or projects whose profitability can be demonstrated, that comply with the development objectives of the countries concerned, and that have favourable effects on the Belgian economy especially through either exports of goods and services or supplies of raw materials and semi-fabricated products. SBI seeks particularly to co-operate with local development institutions and with international or other bilateral institutions encouraging economic development.*

Type of finance: *equity participations; debenture bond subscriptions (straight or convertible); term loans; combinations of equity and loans. In all cases, the SBI's financing should be complementary to other sources of long-term finance, either local or foreign. Loan maturities range from 5-12 years; interest rates are market rates with the possibility of a 2-3% subsidy in certain cases where Belgian exports are involved.*

Sectors: *all directly productive sectors, with the exception of projects with very delayed profitability and requiring very long-term finance.*

Area of operations: *any country providing sufficient security to foreign investment.*

Organization: *all operations are conducted from the Brussels headquarters.*

Project management: *SBI expects projects to be managed by experienced professionals, generally provided—in an initial stage—by a qualified technical partner.*

Procurement: *SBI favours projects making use of Belgian equipment, techniques and know-how.*

Services available: *SBI's staff plays an active advisory role in matters such as the finding of Belgian technical partners, financial, engineering and legal questions.*

63, rue Montoyer, B-1040 Brussels
Tel.: (02) 230.27.85
Telex: 25744 SNIM Attention SBI

GERMANY

German Finance Company for Investments in Developing Countries

DEUTSCHE FINANZIERUNGS GESELLSCHAFT FÜR BETEILIGUNGEN IN ENTWICKLUNGSLÄNDERN GmbH (DEG)

Status: *limited company established by the Government of the Federal Republic of Germany in 1962.*

Purpose: *to assist developing countries in the improvement of their economies.*

Funding: *share capital of DM 1 000 million; funding on German capital market.*

Operations: *DEG operates according to private enterprise principles. It has to obtain an adequate return on its commitments in order to cover its costs. Thus it contributes to the financing of investments with reasonable prospects of making a profit following an appropriate development period.*

Type of finance: *equity and/or long-term loans with equity features, with maturities ranging from 8 to 12 years and at rates having regard to prevailing rates on the German capital market.*

Sectors: *generally all types of viable private industries; development Banks.*

Area of operations: *developing countries worldwide.*

Organization: *operations are conducted in Cologne through four regional departments – Africa, Asia and Oceania, Central and South America, Europe.*

Project management: *Due to its considerable contacts DEG can help to identify suitable project management.*

Procurement: *DEG finances projects with German or European partners. Projects are required to ensure that German suppliers of goods and services have a fair and equal opportunity to compete for resulting contracts.*

Services available: *identification of financially viable project proposals, including the search for a qualified German partner to provide technical know-how, management and capital; appraisal of projects, planning of the construction phase and subsequent medium-term commercial development; assistance in arranging financial packages by providing own funds as equity and long-term loans and matching funds from private investors, local development banks and international institutions; support in establishing the legal framework and obtaining the necessary approval of local governments; close follow-up of the physical implementation of projects and their commercial development through monitoring and supervision systems.*

Belvederestrasse 40, Postfach
45 03 40 D-5000 Köln 41 (Müngersdorf) Tel.: (022) 49 86-1 Telex: 8 881 949 DEUTSCHGES KOELN

KREDITANSTALT FÜR WIEDERAUFBAU (KfW)

Status: *Corporation established by public law in 1948 with its registered office in Frankfurt am Main. No branch offices.*

Capital: *DM 1 000 million, provided as to DM 800 million by the Federal Government and DM 200 million by the governments of the Länder (Federal States).*

Purposes: *promotion of the domestic economy; promotion of the economies of developing countries.*

Functions (in relation to developing countries): *activities fall within the framework of German financial cooperation with developing countries and in connection with the technology programme. Handling of all loans and grants; appraisal, follow-up and supervision of the projects financed.*

Funding: *from the federal budget.*

Type of finance: *long-term loans with maturities ranging from 20 to 50 years and interest rates ranging from 0.75 to 4.5 % as well as grants (primarily for the benefit of the least developed countries).*

Utilization of funds: *funds are made available subject to official application by the governments of the developing countries and for the following purposes: primarily for investment projects in the fields of agriculture, economic and social infrastructure as well as in the industrial sector; as loans to local and regional development banks; as general commodity aid for goods and services covering current civilian import requirements; for manpower assistance for the project sponsor, etc.*

Area of Operations: *Worldwide*
Palmengartenstrasse 5-9
6000 Frankfurt am Main
Tel.: 611 74311
Telex: 041/411352

FRANCE

CAISSE CENTRALE DE COOPERATION ECONOMIQUE (CCCE)

Status: *national public institution founded in 1941.*

Purpose: *to finance projects which promise to improve the quality of development in Third World countries and the French Overseas Departments and Territories.*

Funding: *loans from the Fonds de Développement Economique et Social, self-generated funds and long-term borrowing and bond issues on French and foreign money markets.*

Operations: *investment in directly productive activities or major basic infrastructure essential for the development of the recipient countries; also exceptional aid for rehabilitation programmes.*

Type of finance: *long-term loans with maturities ranging from 10 to 30 years on ODA terms (first window) or terms closer to market conditions (second window).*

Sectors (in order of priority): *rural development*
Public utilities
Industry
Minerals

Area of operations: *Ministerial approval for 34 mainly French-speaking countries in Africa and the Indian Ocean, as well as Haiti and Vanuatu; also French Overseas Departments and Territories.*

Organization: *operations are conducted through 30 local offices.*

Procurement: *except for occasional waivers, goods and services required for the implementation of a project financed by CCCE must originate in France or in the franc zone, or in the recipient country if it is situated outside this zone.*

Services available: *project identification and preparation;*
long-term finance and, occasionally, equity;
provision of project finance covering both offshore and local costs;
occasional provision of technical assistance;
training, in Paris, of higher management staff of local public and semi-public companies.

233 Boulevard Saint-Germain
75007 – Paris
Tel.: 550 32 20
Telex: 0423200750 CAISC F

NETHERLANDS

Netherlands Development Finance Company
NEDERLANDSE FINANCIERINGS MAATSCHAPPIJ VOOR ONTWIKKELINGSLANDEN NV (FMO)

Status: *Limited Liability Company, whose share capital is held as to 51% by Government and 49% by private business, banks, industry and trade unions.*
Purpose: *to stimulate economic and social progress in developing countries by promoting productive enterprise.*
Funding: *share participations and technical assistance through interest free advances or subsidies from the Government; loans through Government-guaranteed borrowings on the Dutch capital market.*
Operations: *to provide financial assistance for investment to private enterprise in developing countries, inter alia in the form of equity and loans and to arrange for technical assistance. To participate in the capital of development banks and to provide special purpose loans.*
Type of finance: *equity and/or long-term loans in Dutch guilders. Interest rates and other conditions are flexible and matched to the project.*
Sectors: *mainly the manufacturing and agricultural sectors. Development banks and small-scale industry.*
Area of operations: *Third World countries. For practical reasons, however, and in order to conform with the Government's policy on development cooperation, there may be countries where FMO will not undertake activities.*
Organization: *potential projects are handled either by the Projects Development Department or by the Department of Indirectly Financed Projects (Development banks and small-scale industry). Operational projects are supervised by the Projects Control Department. All FMO business is conducted through its head office in the Netherlands.*
Project management: *although no direct project management capabilities can be offered, FMO is able to assist a project to obtain management expertise through technical assistance agreements.*
Procurement: *FMO finances projects and not individual transactions. Its funds are not tied to any specific procurement but projects are requested to ensure that Dutch suppliers of goods and services have a fair and equal opportunity to compete for resulting contracts.*
Services available: *FMO offers a clearing house function through its experience in bringing together those technical, commercial and financial partners in the Netherlands or elsewhere best able to serve the project. The possibility to finance up to 50% of the cost of feasibility studies. Long-term financial support, both equity and loans, to local business and industry in the Third World. Where appropriate, finance may be provided, particularly to cover the needs for management skills, technical know-how, specialist services and training.*
25, Nassaulaan, PO Box 85899
2508 CN The Hague, Netherlands
Tel.: 70 61 42 01
Telex: 044/33042 NEFMO NL

DENMARK

The Industrialization Fund for Developing Countries
INDUSTRIALISERINGSFONDEN FOR UDVIKLINGSLANDENE (IFU)

Status: *autonomous, non-profitmaking Fund established by Act of the Danish Parliament in 1967.*
Purpose: *to promote economic activity in developing countries through investments in collaboration with Danish trades and industries.*
Funding: *capital provided by the Ministry of Finance and through self-generated funds.*
Operations: *investment directly in productive and revenue-earning enterprises in developing countries, in collaboration with Danish trades and industries and, normally, together with a local partner, e.g. private persons, enterprises, and/or public agencies. IFU pays great attention to the development effect and the commercial viability of projects.*
Type of finance: *equity and long-term loan with maturities ranging from 7 to 10 years; grace period normally 4 years. Fixed rates for the entire maturity period are equivalent to the official Danish discount rate on the date of approval of loan. IFU may issue a guarantee for loans from other sources. IFU's total financial involvement shall normally not exceed 35% of the total investment nor its equity participation that of the Danish partner. IFU is prepared to extend loans of two years' duration to Danish firms in order to finance feasibility studies on the viability of a proposed joint venture project.*
Sectors: *agriculture, food and beverages*
Chemical products
Metal and engineering works
Consultancy and services
Stone industry, building and construction
Wood, furniture and textiles
Paper and paper products
Area of operations: *developing countries in Africa, Asia and Latin America.*
Organization: *operations are conducted from IFU's offices in Copenhagen. IFU's professional staff participates actively in the preparatory activities on site, and IFU is normally represented at board meetings.*
Project management: *the Danish partner will normally carry the responsibility of technical management. IFU controls operations on site and through reporting systems.*
Procurement: *IFU finances projects. Its funds are not tied to procurement of equipment and/or services from Denmark.*
Services available: *support for investors with long-term finance, particularly equity. Provision of project finance covering both offshore and local costs.*
Knowledge of some 30 developing countries.
Project identification, financing and monitoring capacity.
PO Box 2155, DK-1016 Copenhagen K
Tel.: 1-14 25 75
Telex: 15493 IFU DK

Books about Europe

Michel ALBERT — **Un Pari pour l'Europe (A bet on Europe)** — Seuil editions, 27, rue Jacob, 75006, Paris, France — 153 pages — BF 418 — 1983

After the war, Europe astonished the world with its unprecedented economic growth, an incomparable system of social security and the beginnings of a genuine community. But it all changed in the early seventies when history was reversed—and with dramatic consequences. Europe was hard hit by a slow-down in growth, it was losing its old privileges and was more vulnerable (and therefore more threatened) than others and it began by ignoring the situation. The countries of the EEC gave in to the doctrine of every man for himself and opted to sacrifice the future to the present, preferring internecine struggle to unity. The errors they committed mortgaged the future and the cost is already high. Europe is on the downward path and it could be a path that leads to violence.

Yet another kind of future, one of jointly chosen and jointly-organized economic recovery, is possible. No country can now succeed on its own, except on the basis of a united Europe which still has considerable resources. All that needs to be done is to realize the fact—and to want to do something about it. This small book, which was produced at the request of the European Parliament, is both an uncompromising picture and a grand design. It declines to voice pious hopes and consoling words, preferring to be precise and practical and confined to the possible. Recovery is not a matter for the governments alone. It needs the help of all the people of Europe—and it is also to them that Michel Albert is talking.

The author, an ex-commissioner for planning, coedited the *Défi Américain* and brought out the widely discussed *Pari Français* in 1982.

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EUROPEAN DOCUMENTATION — **Wine in the European Community** — Office for Official Publications of the European Communities — 1983

The vine, which was already in existence more than a million years before the birth of Christ, has been of importance throughout the history of mankind. Viticulture followed the extension of Mediterranean civilization from the Middle East to Greece and, then to Rome, and accompanied the expansion of Roman power in the Italian peninsula, Illyria, France, Germany and Spain.

Although the need to organize production and marketing became apparent centuries ago, it is only in the 17th century that we find the first serious indications of commercial organizations embracing both growers and producers. These generally arose through the initiative of large estates belonging to the nobility or religious organizations. And it is only at the end of the 19th century that a new agricultural structure, the wine cooperative, appears on the major wine markets.

There are now more than 10 million hectares of vines in the world spread over some 50 countries. For more than a decade now world production of wine has been more than 300 million hectolitres a year.

Europe accounts for 71 % of the total area under vines in the world and produces some 80 % of its wine. The European Community, with 27 % of the world's vineyards, is responsible for nearly half of world production of quality wines. There are 2 090 000 undertakings growing vines in the European Community, which is also the source of most exported wine in the world.

This booklet traces the history of the vine and of wine from its origins to the present day. It gives a general picture of the present world position and deals more in detail with Europe and the European Community. It looks at trends in production, marketing and consumption.

The reasons for and objectives of the common organization of the market in wine, which has existed in the Community since 1970/71 and is still being developed, are reviewed. The purpose of the common organization is to develop a wine market covering the whole Community that responds to the aspirations of the millions of both growers and consumers.

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Pascal BRUCKNER — **Le sanglot de l'homme blanc — Tiers monde, culpabilité, haine de soi** (The white man's tears — Third World, Guilt and Self-hate) — Seuil editions, 27, rue Jacob, 75006, Paris, France — 310 pages — BF 570 — 1983

"Every westerner, on the face of it, is presumed guilty. We Europeans have been brought up to hate ourselves, with the certainty that there is an essential evil in our culture for which we have to do pennance—colonialism and imperialism.

Our troubled conscience colours the vision we have of ourselves and the Third World, particularly since the end of the Algerian war. It has created this unlovely, abject midway between marxism and watered-down christianity, that ideology of the Third World whereby Europe and America are the sole causes of everything that has gone wrong with history and it is that that gives us a picture of a sunny south, full of lamb-like have-nots facing a rapacious north, full of wolf-like haves.

This book is not yet another soulful vision of the Third World. It does not invite suspect tears or condescending pity. What it does do, on the other hand, is attempt to approach the south in a positive way that appeals to our sense of friendship and wonder. Is not abandoning colonialism also first abandoning paternalism?

Although self-hate is a suicidal thing implying dislike of the human race as a whole, excessive love of one's fellows involves no less intolerance. The idea here has been to map a path for a paradoxical kind of Eurocentrism which goes between self-sufficiency and masochism and leads westerners to be open to the world outside without denying themselves. An approach of this kind forces us to look at the people of the Third World like foreigners, those other beings that are members of the human race, without being related to us." (L'histoire immédiate, collection

managed by Jean-Claude Guilleband).

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S.A. ANWAR — **The European Community and Indo-British trade relations** — Gower Publishing Co. Ltd., Croft Road, Aldershot, Hants, England — 156 pages — 1983

India has not suffered commercially from Britain's membership of the EEC. Such is the gist of this analysis, by a management studies lecturer at the University of Delhi, of what happens to third countries when their traditional trading partners get into a huddle and form an economic bloc.

Dr Anwar's study of Indo-British trade is not necessarily applicable to other bilateral partners now separated by the Community's common external tariff (CET). But his conclusion provides useful ammunition for partisans of economic "multilateralism", in which "the enlarged community has played a pioneering role". Thanks to trade liberalization measures such as the Community's generalized system of preferences, "the main finding is that the beneficial impact of these liberalization measures swamped the negligible negative impact of CET", at least in the Indo-British context.

The 100-odd pages of this argument began as a Ph D thesis. Thanks to an EEC grant, they have reached a wider audience—deservedly so, since the European experiment in economic integration is now old enough to replace theory with fact. The facts of India's experience, since the UK joined the EEC 10 years ago, should answer some of the Commonwealth countries' initial fears. Mother England may have divorced the Empire and remarried Europe, but she still gets on well with the Commonwealth family. As for the wider EEC-ACP trade relationship, Dr Anwar's vague conclusion also seems optimistic: "The Community's trading relationship with non-member countries is likely to be effective in the context of multilateralism if it ensures an equitable distribution of trade and economic gains among the developing countries".

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Lawrence FREEDMAN — **The evolution of nuclear strategy** — International Institute for Strategic Studies, London — Macmillan Press — 473 pages — £ 8.95 — 1982 (reprint)

The devastation of Hiroshima in August 1945, by a single atomic bomb, set strategists a dilemma which they have been trying to resolve ever since: was it possible to prevent the enormous destructive power of nuclear weapons being unleashed while still exploiting this power for purposes of national security? Over the past 35 years, more countries have acquired nuclear weapons, the size of their arsenals has grown, and the technology of the weapons and their means of delivery has advanced from the crude, 20 kiloton weapons of the 1940s to the high-accuracy, long-range, multiple-warhead, multi-megaton weapons of today. Much of this has served to complicate rather than ease the original dilemma.

In this comprehensive study, Lawrence Freedman describes the impact of nuclear weapons on strategic thought. The book begins with the theories of airpower which shaped the early appreciation of the role of atomic weapons. A discussion of the movement in the West towards reliance on nuclear weapons to deter Soviet aggression, and the major problem of credibility that arose as soon as the Soviet Union developed its own nuclear capability, follows. The book examines in detail a succession of attempts to improve the credibility of a nuclear strategy.

The highlights of strategic debate throughout the whole postwar period—massive retaliation, limited war counter-force targeting, no-cities doctrine, assured destruction, selective strikes—are examined. The theoretical debate is linked to the formation of policy in each of the nuclear powers. The many authors discussed include not only those responsible for the "golden age" of American strategic thought, such as Brodie, Kahn, Schelling and Wohlstetter, but also the different perspectives of writers in Britain (Liddell-Hart and Blackett), France (Beaufré and Gallois), the USSR (Talensky and Sokolovsky) and China (Mao).

Dr Freedman is professor of war studies at King's College, and was formerly head of policy studies at the Royal Institute of International Affairs. This is a major guide-book to the age of the Bomb which brings the weight of scholarship to a single issue: is a "nuclear strategy" a contradiction in terms?

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Samuel PISAR — **La ressource humaine (Human resource)** — Jean-Claude Lattès Editions — 379 pages — BF 600 — 1983

Samuel Pisar, author of the international best-seller *Le sang et l'espoir,* is, Solzhenitsyn says, one of the few people to see clearly.

The extraordinary story of his life and the gathering storms have led him to speak again. He shows us that the universe is swept with gusts, the violence of which we fail to register, and that peoples and individuals contain the key to survival within them, in their stamina and in their ability to adapt and create. This human resource is boundless and, if we use it, there will emerge societies in which labour and capital are things of the past.

Samuel Pisar now takes the present, a time he both observes and is involved in, and he lets us share his passionate vision of the world we live in.

"Fifty specialists from all over the world met in Marly-le-Roi in the summer of 1979 to assess the size and cost of an operation which was very courageously started by Chilian navigators in the 19th century but fell by the wayside and has never been taken up since. The idea was to exploit this new found land of Antarctica which is there, on our doorstep, only just past the Falkland Islands, and which could give the world enough to transform our economic problems for a century while we are awaiting the continents of tomorrow, those Antarcticas in the making, Siberia, Alaska, Australia and Amazonia, full of more wealth yet. And then there is the ocean bed. But ultimately, the continent of continents, the one which knows no boundaries, the perfect continent, mankind's veritable common ground, is the so far unexplored, unexploited grey matter of the human brain".

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Agricultural research

A key to the hunger problem

FAO

FAO

An agronomist inspects potato crops at the Camberêne horticultural centre in Senegal (photo 1); another gathers samples of barley in Ethiopia (photo 2), and a third examines coffee beans, also in Ethiopia (photo 3)

FAO

Nothing perhaps, in this century, has troubled the conscience of Western nations as much as hunger in the world. The dramatic television pictures of the Sahel drought in the 1970s and the famine in the Karamoja region of Uganda in recent years have brought home more vividly the human tragedy that the vagaries of weather, poor soil, ignorance and lack of foresight can provoke.

Sadly, the situation is still with us. In many parts of the developing countries thousands of people, mostly children, continue to die of hunger and malnutrition as agriculture fails disastrously. Western industrialized nations have stepped up food aid in response. But this cannot be indefinite: the population of the Third World is growing rapidly and gradually overtaking food production. These countries must therefore eventually be able to feed themselves. This means improving their agriculture by applying the scientific and technical knowledge at the disposal of man.

The influence of science and technology on agriculture has, of course, been recognized for a very long time: they have largely been responsible for the giant strides the western industrialized nations have made in agriculture over the past 30 years (see, for example, the graph below which shows the growth of wheat production in France from 1815 to 1980).

The existence of many international and national research institutes specializing in tropical agriculture is further evidence of this recognition. However, never have science and technology commanded the attention of development experts, politicians and organizations as much as in the past five years: the United Nations Centre for Science and Technology for Development has stepped up its activities in the developing countries following the conference it held in Vienna in August 1979, during which a plan of action was adopted; in the wake of President François Mitterand's statement at the Versailles summit of western industrialized nations, in June 1982, regarding the responsibility of the developed nations towards the Third World and the subsequent law on science and technology voted in the French parliament the following month, French research institutes, which collectively are said to represent about 50 % of the knowledge of Western Europe in tropical agriculture, are planning major reorganizations to reinforce their presence in the developing countries; the European Community, on the other hand, is devoting a total of ECU 100 million in the coming four years to research in agriculture and related problems in the Third World. With similar efforts being made all over the world by governments and organizations, our dossier examines the contributions agricultural research can make to solving the problem of hunger in the world.

The first part contains articles of a general nature on the virtues and problems of research into tropical agriculture and two interviews, one with EEC development commissioner Edgard Pisani, and the other with FAO director-general Edouard Saouma.

The second part deals with farming systems in the tropics: the danger of exporting wholesale western scientific and technological models to the Third World; progress and prospects in research into new methods of cultivation, including the advantages of animal traction and the possibilities of adapted technology. The third and fourth parts are devoted respectively to case studies of crops and countries.

Agricultural research is a wide subject. So this dossier cannot pretend to cover all its aspects. For example, it does not include animal production and forestry. These have already been the subjects of special studies in the *Courier* (Nos 65 & 74), although not dealt with specifically from the research point of view. We may perhaps come back to them at a later date.

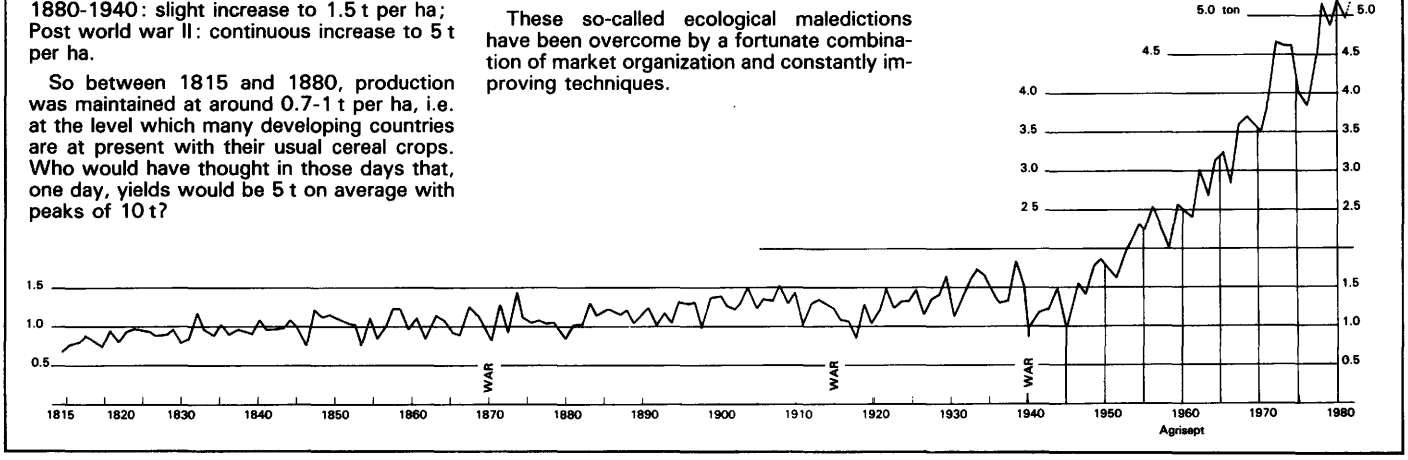
This graph on wheat yields in France since 1815 is an interesting one. There are four phases:
1815-1850: a slight increase (0.7-1 tonne per hectare);
1850-1880: stagnation around 1 t per ha;
1880-1940: slight increase to 1.5 t per ha;
Post world war II: continuous increase to 5 t per ha.

So between 1815 and 1880, production was maintained at around 0.7-1 t per ha, i.e. at the level which many developing countries are at present with their usual cereal crops. Who would have thought in those days that, one day, yields would be 5 t on average with peaks of 10 t?

Would they not have said that the climate, the soil, weeds, insects and diseases were the unavoidable enemies of high production? After the last world war, even the specialists were saying it would be difficult to go beyond the 3 t per ha mark.

These so-called ecological maledictions have been overcome by a fortunate combination of market organization and constantly improving techniques.

This revolution should inspire the developing countries with confidence—if they can encourage their peasant farmers to use the more productive techniques that their national researchers must gradually evolve.



"It is shortsighted, even blind, to have development without research"

Edgard Pisani says

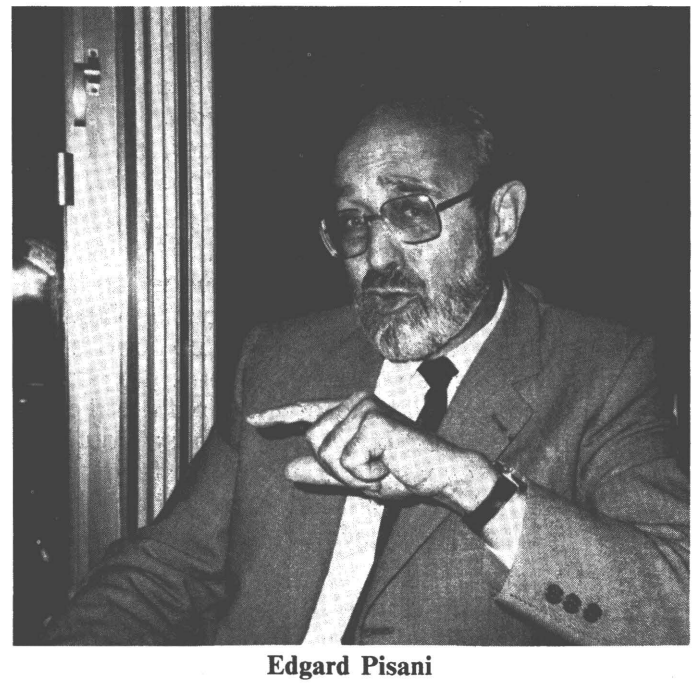
In this interview with the *Courier,* the EEC Commissioner responsible for development explains the important role agricultural and scientific research can play in the economic progress of the ACP states.

▶ *Commissioner, was the EEC discovering scientific research as a component of development when it launched a ECU 40 million scheme in December 1980 and when it drew up a new programme recently?*

— I don't think the EEC is discovering it. I think it is giving itself the means to tackle and maybe try to solve the problems its knows to exist. And what problems are they? It is easy to see that exportable goods have reached a far more advanced stage of technological development than food crops in places like Africa and the Caribbean, and the Pacific too. So ultimately, research has benefited trade more than it has benefited development. It ought to have occurred to us that this situation could be handled just by setting up research centres in the developing countries with the aim of making up for lost time. Some people also thought that the developing countries' backwardness was such that it was in Europe that the scientific research would have to be carried out. But, on reflexion, it became clear that either approach was pointless by itself and that the two had to be combined if they were to be fruitful.

Europe has to use its equipment, its machinery and its knowhow for the benefit of the developing countries, to help them adapt and to suggest better answers to the real questions that crop up in the field. But alongside this—and this will take time—the non-industrialized countries have to develop research capacities of their own. It is only by combining these two approaches that we can achieve the solution we want for the developing countries, that is to say when they reach the stage where they can take part in international scientific exchange, express their real problems properly and provide a certain number of answers for themselves.

I should like to emphasize particularly the need for harmony of the two approaches. I could give you a thousand reasons for this, but I shall justify it, essentially, in two ways: the technology we now have in Europe is extremely sophisticated and you need a certain degree of culture, knowledge and scientific knowhow to understand, grasp and exploit it. So if we want the technology we have here in Europe to be adapted to the situation in Africa, the Caribbean and the Pacific, there have to be people in Africa, the Caribbean and the Pacific who can do the adapting. If there aren't, all you have is a transfer of technology, a graft that will not take.



Edgard Pisani

"You only find what you are looking for and you only seek what you need"

And the second thing is that, basically, you only find what you are looking for and you only seek what you need. If Africa does not state its problems and the Caribbean and the Pacific do not to state theirs, they will not get any answers. And it is only if teams of scientists in the ACP and other developing countries emerge, get organized and create a complex network of relations, capitalizing on the technological advances of Europe, the USA and Japan for transfers, that they will first be able to state clearly and exactly what their problems are and then come up with their own solutions.

▶ *The Community now has two programmes. What do they have in common and where do they differ?*

— They are tied up with the two approaches I've just mentioned. One programme is run mainly by the directorate-general for research. This is part of Europe's global research programme and it is intended to gear part of EEC research to the problems of the developing countries. The development directorate, on the other hand, is the main organizer—with help from the research directorate—of a programme to develop and arrange all the research abilities in the developing countries. It is a combination of the two that will, we hope, yield results in the medium and the long term and which could also come up with something in the short term.

▶ *Why are these programmes centred on farming, food and public health when the EEC's outline programme mentions other research themes that are also of interest to the developing countries?*

— There are two reasons for this. The first is an urgent one and the second is a specific one. The urgent ques-

tion is this. It is clear that food, farming and health (and we should perhaps have added energy to this list) are absolute priorities, as unless they develop their ability to produce food and protect their human and animal populations against threats to their health, there can be no economic or human future for the developing countries, particularly for Africa, which has 400 million inhabitants now and will have 800 million by the end of the century. Africa has a food deficit, and it will still be a terribly large deficit by the end of the century if it does nothing about it—and it cannot afford not to. Hence our priority seems to me to be a reasonable one and is in line with what most of the countries of Africa want.

But the specific sectors, electronics, mechanics, chemistry and telecommunications pose only the problems of adaptation. In farming, nutrition and health, the effects of the terrain and the geography of the problems are extremely important; the discoveries made about certain diseases in Europe—assuming they exist—are of slight help in the fight against the same diseases in Africa. With nutrition, for example, it is remarkable that the whole milk powder system, for example, is suitable for the specific diet of whites and that sending it as it is to African children does not produce the anticipated results. So there are specific data in food, farming and health and, no doubt, in energy too which require that we pay particular attention to these areas. Transfers of technology in some areas are not good, but they are acceptable in others.

▶ *Do you think that research can come up with anything decisive for the anti-famine campaign?*

— Food strategies are essentially national things: such and such a country embarks on food strategies with the help of the Community and other institutions. At the outset, if you like, there are no connections between immediate strategies and research.

But it is clear that, unless you develop research, get higher yields and encourage rainfed agriculture, in particular, on a continent like Africa, unless you solve a certain number of problems relative to wild and domestic herds, particularly of species like camels and donkeys, unless you push up the yield of sorghum—which does far better in Europe than in Africa, where it, in fact, comes from—you will never feed the continent of Africa.

Africa will never feed itself unless it steps up research into genetics, into threats to crops, into methods of conservation and into the best chemicals and fertilizers, resolving such questions as the effect of the same fertilizer on two types of soil, one in the temperate zones where there is average or high humidity and one where there is a tendency towards laterization; what the effect is of the same fertilizer on two types of soil in completely different climates with completely different sub-strata. These things have to be investigated. A start has been made, but if we want Africa—and this is a major topic—to become self-sufficient, then research has a very essential part to play.

"Research is the ultimate expression of a forward-looking society"

▶ *The international scientific community has learnt a lot over several decades. Could Africa go faster if it adapted existing techniques to local conditions and disseminated the results?*

J.I.S.

A year of good harvest in Jamaica. This effort must be sustained through autonomous scientific research programmes

— Yes—provided doing so does not make it lazy. If borrowing the results of the international economic community meant that Africa didn't have to do research of its own, with or without our help, then it would be back to square one in 10 or 20 years. Research is not an eminent scientist in a population unconcerned with research. It is the ultimate expression of a forward-looking society. And if the African society is content to borrow from the international community without making sure that it can find things out for itself and make vigorous use of and demands on that knowledge, then it will make no progress. Africa has to become a continent like the others, with its own researchers, its own science and the ability to take part in international scientific exchange.

That it has to adapt existing technology for the time being is obvious and we are very concerned with transferring discoveries made in India and Latin America and in other places to Africa, but this must be no more than a foundation, a basis on which a real African system of research can be built. This is a point on which I am more African than the Africans and more ACP than the ACPs. My demands are high. I do not agree that Africans should be content with contributions from abroad and I shall fight tooth and nail to see they are not. The developing countries have to obtain the machinery for scientific independence over the next 10 or 20 years. I don't mean scientific autarky, but scientific independence—the ability not just to receive but to exchange.

"There is no such thing as fate"

▶ *Is it really likely that Africa could have the sort of agriculture that is as productive as that in the temperate zones?*

— I have seen, with my own eyes, examples of desperate situations. I have seen lousy soil at Champagne in France. It was terrible. After the first world war, they planted pine trees that were no better than matchsticks 40 years later, but now this particular area is France's

biggest producer of sugar beet and grain. There is no such thing as fate. And then there is maize. France used to import a great deal of maize, which was produced no further north than Bordeaux, but it is now grown in the Loire, around Paris and up to the Belgian frontier and all thanks to scientific research combined with an incentive economic policy.

It's true that it's difficult and it's true that the nationwide effort we had to make seems considerable if the same sort of effort has to be made throughout the continent of Africa. But that is yet another reason for being methodical and getting organized and seeing that no single research centre thinks it has to tackle any given problem alone. The immensity of Africa and the immensity of the problems that its lands and its peoples pose forces us and the Africans to get organized. And the same goes for the Pacific and the Caribbean too. So we Europeans have to back cooperation.

▶ *Will the ACP countries, with their privileged relationship with the EEC, have a particular place in these plans?*

— Research is already becoming more important in both national and regional programmes and I hope the trend will continue. This will, of course, depend to a very large extent on the will of the African, Caribbean and Pacific countries to let it do so. If the ACP group asked us to be more specific about the place of research in cooperation between it and the Community during the forthcoming renegotiations of the Convention, we would be willing to make a very positive examination of the question.

"Research has a part to play in development everywhere"

▶ *What connections do you see between development projects and scientific research?*

— First of all, research has to come out of the laboratory. Research covers everything—climate, soil, chemicals and so on and there can be no genuine development without it. Here is a very specific example. You know just how much importance we here, and I personally, attach to the problem of the climatic deterioration of Sahelian Africa. You can crawl about on all fours in the desert with a microscope and a magnifying glass and see just which species survive. You can sink wells and see that there are still areas which can be used because there is water a few yards below the surface. You can research into the sort of vegetation that will fix the sand-dunes, create the right sort of microclimate and provide food for travelling herds.

But you can also use satellites to measure the phenomena in time and space. Research is a complete whole. And development means change. It is shortsighted, even blind, to have development without research. So as far as we are concerned, as far as I am concerned at any event, research is an attempt both at anticipating like radar, and backing up events. And it is also an attempt to analyze, on the face of it, the possible consequences of the phenomena in question. Research has a part to play in development everywhere. o

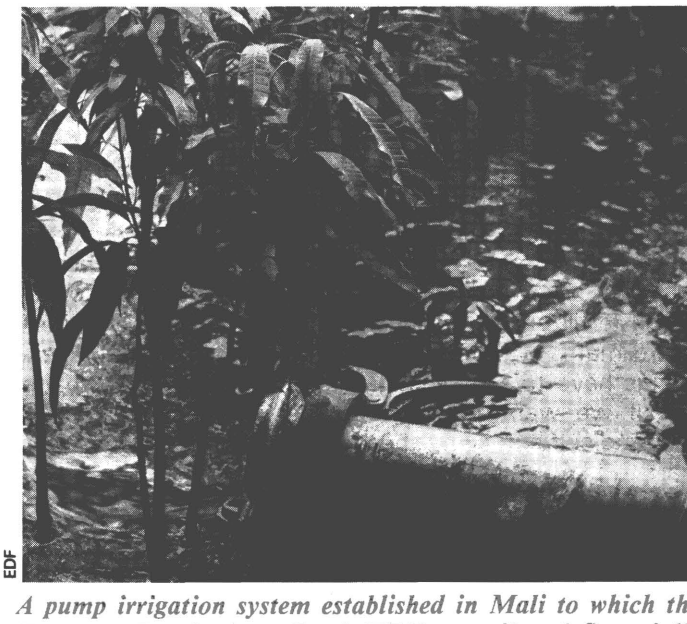
Interview by
AUGUSTINE OYOWE

Community agricultural research schemes in the developing countries

by Jean-Louis CHILTZ (*)

The Community has only financed a few agricultural research schemes so far. There are a number of reasons for this. The main ones are:
— the need for the partner countries, which have just gained independence, to put priority on installing the basic infrastructure and running the productive projects that will enable them to promote their own development (hence, the emphasis on the programmes of growing industrial crops, which are a source of foreign exchange);
— the fact that, at the beginning of association, the food situation in these countries was not a cause for concern as it has been in recent years—which has led to a relative neglect of research into food crops;
— the fact that agricultural research into export crops (palm oil, cotton, coffee, cocoa, tea and so on) has had considerable help from bilateral aid from the Member States.

In addition to the accompanying research (tests on different varieties and growing techniques) carried out when agricultural projects are implemented—which has in some cases led to small research stations being set up (as in Burundi, for example, with hydro-agricultural development), the Community has financed a number of applied agricultural research projects in the following areas:
— methods of predicting rice harvest by remote sensing;



EDF

A pump irrigation system established in Mali to which the European Development Fund (EDF) contributed financially

(*) The author works at the Agriculture, food and the environment; food aid division of DG VIII in the Commission.

Table I: EEC-financed agricultural research schemes since 1958

Ongoing projects		*Amount* (ECU '000)
In the ACP countries		
— Improvement of millet and sorghum (2nd EDF)		1 200
— Improvement of millet, sorghum and maize (4th EDF)		3 000
— Rice, maize, niébé and soya improvement programme in tropical Africa (5th EDF)		2 500
— Boosting WARDA's (1) means of intervention (4th EDF)		1 000
— Rice production forecasts (4th EDF)		423
— Field research into control of the tsetse fly and the cattle tick (5th EDF)		1 500
— Cocoa research unit (4th EDF)		950
— CARDI (2) research station (4th EDF)		1 500
— Assistance for CARDI (5th EDF)		3 035
	(Sub-total)	**(14 858)**
In the non-assisted developing countries		
Contribution to the budget of four CGIAR (4) institutes		
CIAT (5) (1978-1982)		5 950
CIP (6) (1978-1982)		3 200
ICRISAT (7) (1977-1982)		7 200
IRRI (8) (1976-1982)		8 050
	(Sub-total)	24 400
	GRAND TOTAL	**39 258**
Planned projects (before end 1983)		
In the ACP states		
— WARDA means-boosting, part II (5th EDF)		1 000
— Rice, maize, niébé and soya improvement programme in tropical Africa, part II (5th EDF)		2 000
— Surveillance of replaceable natural resources in the Sahel (CILSS) (3) (5th EDF)		1 500
— Research into trypstolerance in Senegambia		2 500
	TOTAL	**7 000**
In the non-associated countries		
Contribution to the budget of four CGIAR institutes		6 000
	TOTAL	**13 000**

(1) WARDA = West African rice development association.
(2) CARDI = Caribbean agricultural research and development institute.
(3) CILSS = The permanent interstate committee for the fight against drought in the Sahel.
(4) CGIAR = Consultative group on international agricultural research.
(5) CIAT = Centre internacional de agricultura tropical (Colombia)
(6) CIP = Centro Internacional de la Papa (Peru).
(7) ICRISAT = International crops research institute for the semi-arid tropics (India).
(8) IRRI = International rice research institute (Philippines).

— improvements (particularly genetic) to modern and traditional food crops;
— the campaign against trypanosomiasis.

These were either regional projects or contributions to the activities of international agricultural research institutes in the CGIAR (Consultative Group on international agricultural research). So far, commitments to research into agriculture in the developing countries since 1958 total ECU 39 258 000, 97 % of which is being used for research into food crops. The rest has been earmarked for a regional cocoa research project (see the above table).

By the end of 1983 the sum of ECU 7 million from the regional cooperation fund would have been channelled into agricultural research. The Community's contribution to CGIAR's budget for international research for 1983 is estimated at ECU 6 m.

On 3 December 1982, the Community decided to implement an R & D programme on science and technology for development. This is worth ECU 40 m (ECU 30 m of which will go into agricultural research) and will be for a period of four years (1983-1986).

The aim of this programme is to promote research activities in Europe that have a heavy technological content and would be difficult to run in the developing countries at present. The closest collaboration possible between research in Europe and research in the developing countries will, however, be sought.

The programme will be implemented via shared-cost research contracts, the Community covering 50 % of the costs of the European institutes involved, but a higher percentage will be covered for contracts with institutes in the developing countries. An invitation to tender has been launched and offers were due to be in by 15 July 1983. The Commission's 1983 budget includes ECU 5 m to finance a first slice of this work.

As a complement to this programme, the Commission proposed (in June 1983) to the European Parliament and the Council a programme to strengthen the developing countries' national scientific research capacities.

Phase one of the programme will deal with agriculture, food and health. Community schemes in these areas, for which ECU 60 m (40 m for agriculture and food and 20 m for health) has been earmarked, will cover the operation and the equipment of research centres in the developing countries, training for their technicians and researchers, access to scientific information and the dissemination of results.

The two latter programmes are an integral part of the outline programme for 1984-1987 for a European scientific and technical strategy, the principle and general aims of which the Council adopted on 28 June 1983. This programme includes the possibility of boosting the development assistance allocated for:

— aid channelled through Community and international research organizations;
— emergency aid for national and regional research systems in the developing countries. o J.-L.C.

Research: An ivory tower "as long as there is no really integrated rural development"

The food situation in the developing countries has continued to worsen in spite of progress in agricultural research. Does this mean agricultural research has been a failure? FAO director-general Edouard Saouma replies in this interview.

— The food situation has indeed worsened in many developing countries, particularly those in Africa. But, first of all, I should like to stress that the picture is not so gloomy everywhere.

Cereal production of course stagnated in 1982 and the *per capita* output in the 65 poorest countries dropped by 3% of the 1981 figure. However, the results of agricultural research and other factors (food production policies, for example) that are decisive in production cannot be judged on the basis of one harvest alone.

A longer-term retrospective analysis shows that there have been successes as well as failures in the developing countries' food production. The low-income countries of south and south-east Asia have increased their total production by an average 3.4% per annum since 1970. The most heavily populated countries of this region partly owe their success to innovatory research programmes. India, for example, has managed to become self-sufficient in grain and this is due in particular to the remarkable performance of the Punjab, which has capitalized on its fertile soil and used high-yield varieties and now supplies almost two thirds of India's grain reserves.

However, in the poor countries of the Middle East and Latin America, and above all in Africa, cereal production has increased by an average 1% p.a.—that is to say, far more slowly than the population has increased. Not only are these countries among the poorest in the world, but they also have extremely limited resources—and that means both finances and skilled workers to explain the results of agricultural research. So these are the countries where agricultural research has the least effect.

A look at the past 20 years shows that very few transfers of technology have occured in these parts of the world, in spite of the remarkable activity of the international research centres in the advisory group on international agricultural research and other national and regional institutes.

But this does not mean that agricultural research in the Third World has been a failure. All it does is show that research will not be fully profitable unless we have integrated rural development, of which it is but one of the components.

FAO

Edouard Saouma

▶ *Can it be said then that socio-cultural factors are major obstacles to the application of the results of agricultural research?*

— Agricultural research can never be a panacea that dispenses the need for taking economic and social measures as well. Quite the opposite. Research will remain in its ivory tower as long as there is no really integrated rural development and new technologies are developed without reference to the particular features of the peasant communities of the Third World. Research does not guarantee the small peasant access to the credit he needs and it is not in itself an incentive to production. As long as the small peasant farmer is without the credit facilities that will enable him to use these new technologies, progress in research will only have a marginal effect on his productivity. And the same goes for training. As long as the peasant farmer is left to himself and has no training or supervision to improve his output, agricultural production will be inadequate.

This is what I mean by socio-cultural obstacles. Some people, however, are quick to blame the forces of socio-cultural traditions, claiming that they are an obstacle to the spread of the results of research. If such obstacles are still with us, it is because quite often there have been no serious attempts to remove them or to design the sort of technologies that are really suitable for the specific conditions of societies in the developing countries.

Farming systems and research

▶ *To what extent have farming systems held back food production in the Third World?*

— It would be fairer to say that the constraints, first of all, are due to the environment and that the traditional farming methods used in the developing countries depend on that environment—which is itself shaped by most unpleasant natural conditions and, recently, by increasing demographic pressure. These traditional methods were relatively well suited to the environment while the population density was low, settlements were

scattered and the standard of living was barely at subsistence level.

Some farming methods responded perfectly well to the conditions of the environment for many years and, if they are deemed inadequate today, it is mainly because of the sudden increase in the population. Shifting cultivation, which is still practised in Africa today, is responsible for deterioration of the soil through a reduction of the fallow periods.

It might seem ideal to use the farming methods of the temperate climates in the developing countries, as they have proved successful there. But they demand a great deal of mechanization and a great deal of energy, as well as involving a considerable reduction in farm labour. They also require large plots and large quantities of chemicals, particularly fertilizers, and all this is difficult to achieve in most of the countries of the Third World.

There are many examples (from south-east Asia in particular) of the modern technology proposed to the small peasant farmer being perfectly suitable for local conditions. When the socio-economic structures are right and price policies allow, traditional farming methods are by no means a barrier to progress. In cases of this kind, there will be a movement towards this kind of technology making for higher productivity and ensuring that the small farmer gets a bigger profit and enjoys a better welfare.

▶ *Can research really provide adequate answers to natural obstacles like infertile soil, locusts, drought and so on?*

— Of course it can. Research has, to a very large extent, found suitable answers to the problems you have mentioned and to many others as well.

One of the techniques that research has come up with for improving the fertility of the soil is the biological fixing of nitrogen, which promises great things, But it is not a universal panacea and it would be dangerous to imagine that it could replace chemical fertilizers. First of all, because nitrogen is only one of the three main nutritive elements for plant growth and so the use of potassium and phosphate fertilizers is usually necessary. Nitrogen fixing tends, for the moment, mainly to be used with leguminous vegetables (soya, groundnuts, beans and certain forage crops) and with the algae that occur in rice paddies. The developing countries should certainly derive considerable benefit from nitrogen fixing and they must familiarize themselves with these techniques—although they should not, of course, expect miracles. The FAO recently launched a programme of aid and specialized training in this area, so these countries should soon be in a position to integrate and apply the results of the research.

Genetic engineering, of course, will perhaps enable us to transmit to cereals the power which leguminous vegetables have of fixing nitrogen, but it is unlikely that tangible results will be achieved within 20 years here, so fertilizer is still essential for cereal production.

Research and a continuous monitoring system have made it possible to control the reproduction of locusts in Africa, so we can now predict and restrict the effect of the invasions. There has been considerable success in all but the regions where fighting has made control out of the question (East Africa, for example).

Lastly, research has come up with a number of ways of controlling and minimizing the effect of drought. These effects can be attenuated if catchment basins are developed and the techniques of storage improved and if more drought-resistant varieties or more suitable crops are used.

However, outside the development of irrigation where this is technically and economically possible, there is virtually no other solution to the problem of drought in the many parts of the Third World where the density of the population and the livestock are far beyond the production capacity of the soil, even when the most advanced technology is used.

Root crops versus grain

▶ *Most parts of the developing countries depend very much on root and tuber crops. Now, tubers are less nutritious than cereals, so in view of widespread malnutrition, shouldn't research lay more emphasis on cereal production? Do you think it is possible to strike a proper balance between these two kinds of crops in the regions where the soil and the climate are more favourable to one or the other?*

Your approach is a little bit schematic, I think. Our figures put root vegetables and tubers in third place in the developing countries, after cereals and pulses. But in any case, research into leguminous vegetables and roots and tubers, and the production of them, have to be encouraged there where they are popular with the consumer. The FAO has run studies on the production of leguminous vegetables in Latin America, the Caribbean, the Andes, the Rio de la Plata basin, Chili, Mexico and Brazil and in the countries of the Pacific; the accent has been on increasing the production of the tropical root vegetables which are such an important part of the diet of the rural populations. The FAO has drawn up a project to increase potato production around the Mediterranean and in the Middle East. And we have run projects on soya production in Mozambique, Sudan and Zambia.

But a number of factors have to be borne in mind. One is that roots and tubers are far less easy to keep and transport than cereals and cereals have the added advantage of providing a high calorie output from a very small volume. Then all roots and tubers are not equally nutritious. Manioc (cassava), for example, is very poor in protein, although yams and potatoes are slightly better from this point of view. And lastly, roots and tubers can only be grown in some ecological zones in the tropics and sub-tropics. Briefly, then, all these and many other things have to be taken into account before any decision is taken on whether the production of roots and tubers or cereals should be encouraged in any given country.

The FAO has been helping to produce varieties of wheat and barley that are suitable for the dry climates of certain regions for some time and work has been carried out in Egypt, Ethiopia, India, Iran, Pakistan and Turkey to obtain more nutritive varieties of these two cereals, while in Africa, the emphasis has been on maize, sorghum, millet and rice. In this way, the FAO is providing assistance with more than 20 national rice programmes covering a

wide range of different ecological and rice-growing conditions: rainfed rice in Gabon, Upper Volta and Tanzania; lowland rice in Comoros, Mozambique, Sierra Leone and Vietnam; irrigated rice in Senegal, Mauritania, Tanzania and Zambia; and mangrove rice in Guinea Bissau. The FAO is also helping the West African Rice Development Association, WARDA, to run special irrigated and mangrove rice projects. Today new varieties that are resistent to both cold and high altitudes are being developed and they will be able to be grown in eastern Africa.

▶ *A number of countries are major producers of cash crops but have a food shortage. Is this due, in your opinion, to lack of political will to diversify or as a result of natural constraints?*

— In many developing countries, research and investment in cash crops were much greater before independence. This was difficult to alter and it was not until the 1970s that research into food crops was given more importance in the development plans.

This research is a relatively new thing and it is still marking time as compared to the results that have been obtained in the cash crops sector. Yet most of the leaders in the developing countries are now convinced of the need to develop food crops if they are to reach the self-sufficiency targets they have set themselves. This does not just mean concentrating on research. It also means developing infrastructure, establishing internal trade outlets and providing the back-up services and training required to push up productivity. And alongside this, they also have to go on developing the cash crops that are vital for their imports of consumer goods and basic products. It is a vicious circle. They have to develop their agricultural exports to pay their increasingly heavy import bills.

We have to realize that the world commodity trade is in complete disorder and dominated by the rich countries. The price of agricultural raw materials is dropping in real terms and they are lower today than they were 20 years ago. Trade and production are closely linked and this is one of the reasons why the intergovernmental product groups set up by the FAO products committee (the body which tries to sort out the problems of commodity marketing) are valuable instruments for the producers. The FAO provides these groups with information on the prices, trade, production and consumption of around 80 food and agricultural products. The studies begun, or completed in 1982 dealt with protectionism and the trade barriers to rice, cereals, bananas and jute, for example, with a support price to encourage the production of wheat, rice and oil seeds. A major study is now being run on the competition between synthetics and natural products and the FAO and the World Bank are running a joint study of the prospects of growing a cash-type crop, jute, in the coming years. The whole economy of a country like Bangladesh depends on this.

Appropriate technology, information, investments

▶ *Is it easier to design appropriate technologies for the development of agriculture than for the development of industry? Can the developing countries easily acquire these technologies?*

FAO

The palm nursery of a palm oil research station in the Ivory Coast

— First of all, I should like to say just what appropriate technology means. It is not technology on the cheap. It is the sort of technology that has been both improved and adapted to the economic and social conditions of the developing countries. Technology that is adapted to these countries should take account of the fragility of the soil and the aggressiveness of the climatic and biological environment (the predators, the diseases and the weeds and so on). It has to cut the demand for imported products (fertilizer, fuel and spare parts) down to the strict minimum. It has to be able to be maintained and perpetuated with maximum use of local resources, particularly local labour and products where settlements are scattered and the means of transport and communication tend to be limited. And it also has to be accessible to the greatest number of people. Here again, structures have to be reformed if economic success is to be ensured. Lastly, it should bring a clear improvement to agricultural production as regards both income and working conditions.

The job is by no means simple. It is certainly easier to control and manage the factors of production in industry than in agriculture. Agriculture is, in effect, a tributary of factors such as the climate, vegetation cycles and so on, and they are very difficult to control. Furthermore, the concentration and supervision of labour in the industrial sector makes it possible to provide crash training courses and centralize decision-making. This is not the case in agriculture, where labour is dispersed and decisions are decentralized to the utmost. And lastly, the rural environment is more rooted in tradition than the urban one. Yet, when technology replaces the conditions I have just outlined and the technique popularization and agricultural credit services have been mobilized to spread it, the producers are quick to adopt it, if they have been clearly shown the point of doing so.

▶ *The training of local agronomists and the exchange of information are essential parts of agricultural research in the developing countries. Do you think adequate effort have been made in these areas?*

— No, not yet. But a distinction has to be made between training for agronomists involved in production,

demonstration and extension works and training for researchers. Although they start with the same sort of training at university, they tend to go different ways afterwards. It is often easier for the developing countries to train production agronomists than researchers. Researchers need advanced training and this very often has to be obtained in the industrialized world. But the students, the future researchers of the Third World, then come up against problems—they are a long way from their environment and the training they receive does not meet their countries' requirements. It is often sophisticated and extremely specialized in a very narrow field. A rice phytopathologist, for example, may know nothing about any other plant diseases, but his country may not be able to run to a different specialist for each crop. These countries need all-round researchers who can soon shoulder heavy responsibility in a vast area of research.

And then the developing countries need so many researchers that the training is, by its very nature, élitist. Researchers cannot be trained on an assembly line. A research boss directs the work of a very small group of students and he follows them for a number of years—and, of course, there are fewer and fewer research bosses in the industrialized countries with experience of the tropics.

However, it has to be realized that an awakening to these problems has led to serious efforts being made at both bilateral and multilateral levels to adapt more to the needs of the developing countries. In particular, the FAO is promoting on-the-spot training for researchers. Our development projects include some research involving fieldwork where our experts are running experiments in close collaboration with their local counterparts. This sort of approach means we can avoid the pitfalls I have just mentioned. It also, and this is most important, enables us to integrate research into a given development project immediately

The FAO's drive with the exchange of information consists of increasing the north-north and south-south flow. Two world-wide information systems, AGRIS and CARIS, are aimed at providing back-up for R & D programmes in food and agriculture. They favour the establishment of contact networks between the researchers. AGRIS collects and publishes all titles of and references to agronomical research documents in the world in general and the developing countries in particular (1). In 1982, 110 national and 13 multinational centres reported more than 130 000 titles, bringing the total number of references available in the data bank up to 850 000. CARIS links 71 developing countries, enabling them to communicate their ongoing research. And Agrovoc, a new thesaurus produced by the FAO and the EEC, published in five European languages (English, French, German, Italian and Spanish), enables librarians in the more than 50 countries already involved to find in one language publications indexed in another.

▶ *It is generally agreed that the amount of money allocated to agricultural research in the Third World is insufficient vis-à-vis the problem it is called upon to solve. With no end in sight for the economic crisis in the industrialized countries, the traditional sources of the bulk of research funds, how do you see the future of research in these countries?*

— The 21st session of the FAO conference in 1981 produced a progress report on agricultural research in the developing countries.

The total amount involved in the national research centres in these countries was $ 1 300 million in 1981, as compared to $520 million in 1975. A more recent study showed that a certain number of developing countries are already channelling the same percentage (1%) of GNP to this sector as the average industrialized country.

The percentage of funds supplied from outside is 20% of the expenditure committed. This clearly shows that the Third World leaders are perfectly well aware of the importance of research for the development of their agriculture.

Yet more external aid will be needed for some time to come, particularly since the economic crisis has hit the Third World harder than the developed world. The donors are well aware of this and are displaying a great deal of generosity. However, it is worth noting that these same donors are wondering whether aid to the international research centres should be stepped up or allowed to stabilize. There is a danger of these institutes being substituted for national efforts and aid has to be more concerned with developing national research capacities. A drive is being made along these lines and there is more interest in establishing dialogue and cooperation between national programmes and international research centres.

A shortage of qualified staff is still one of the main problems of the developing countries. It is, unfortunately, rather unlikely that the situation will improve much in the near future, as the annual increase in qualified staff requirements has, in fact, been assessed at 10% per annum at least.

"Encouraging south-south transfers of technology"

▶ *What is the FAO's approach to agricultural research and how do you see its role in eradicating hunger in the world?*

— The FAO is not an agricultural research institute. Its job is to promote research in the Third World and to try to gear it to development requirements. There are two aspects to our work here. First, to develop the national research capacities and encourage the Third World countries to define their own needs and priorities and second, to promote applied research as part of an integrated approach to all the problems of the rural world, one which is closely linked to training schemes, to extension works and to economic and social development projects.

It is with this in mind that the FAO has put priority on encouraging south-south transfers of technology over the past few years and on any form of cooperation with

(1) Two computerized information systems: CARIS — information on ongoing agronomical research; AGRIS — international information system on agricultural science and technology.

research between the developing countries. Traditionally, these transfers have been mainly made from the north to the south, thereby increasing the risk of unsuitable technology being promoted. Without wishing to deny the need for this kind of thing, the FAO has tried, alongside, to develop south-south exchanges in a number of ways; first, by sending one or more experts from one developing country to another to demonstrate technology that has been successful in similar conditions; second, by organizing cooperation networks between the developing countries with the aim of periodic, regular contact by their researchers, making for an exchange of information on the results and application of their research into a common problem. These networks can also share out the work among the different national research institutes, according to particular means and abilities. The last aspect of this south-south cooperation is the organization of study trips of specialists from the developing countries to research institutes and development projects whose results ought to be advertized and spread to other countries.

All the south-south cooperation programmes I have mentioned tend to be aimed at putting priority on research into food crops and appropriate technology. The FAO is convinced that this approach should enable the developing countries to move towards self-sufficiency in food and reduce their technological dependence on the industrialized countries. o

Interview by A.O.

The use of input in agriculture in the tropical countries

by Hervé BICHAT (*)

Science has had a considerable effect on agriculture. It has brought about a massive increase in production and productivity per hectare and per worker and the trend should continue until the end of this century at least. This development derived from an important updating of agricultural techniques due to the increasingly common use of modern factors of production (seed, fertilizer, agricultural machinery and so on). The table below illustrates trends in the breakdown of added value in the food and agriculture industry in France since the end of world war II.

This increasing importance of input in the running of a farm is the direct consequence of modern science being split into different disciplines. In the field of agriculture, this has led to the production of hitherto unknown but high-performance techniques in the field of genetics, nutrition and engineering too. And it is the use of these new techniques that has made it possible to achieve the performances we have in modern agriculture today. They explain why farmers are now very keen on them. Too keen, some would say when denouncing the immoderate use of certain input (greater fragility of the food and agriculture industry in case of crisis) and worrying about the sometimes irremediable changes to the ecosystems that may ensue (the pollution of water tables and destruction of wild flora and fauna, for example).

(*) Scientific director of GERDAT, 42, rue Scheffer, 75016, Paris.

(1)

	1950	1980	2000
Input	5	25	35
Agriculture	50	25	15
Food and agricultural industries	20	25	25
Distribution	25	25	25
% of added value	100	100	100

As our world is an open one, this trend has also occurred in the hot countries and the use of selected seed, agricultural machinery, plant and animal health products and so on tends to be spreading to all the very diverse kinds of agriculture in these regions. And it poses economic, psychological, technical and, ultimately, political problems of considerable size, not particularly of ecological nature, but rather of the difference in the respective situation of agriculture in the temperate climates and in the tropics.

First of all, all the crops in the hot countries have not been caught up to the same extent in this trend. The first productions to benefit were those for which commercial outlets were assured. This brought in financial income, enabling input purchased outside the farm to be used. As, a century ago, the local markets were limited or non-existent, only colonial and industrial crops were assured of outlets and thus were able to expand. Obviously, the situation today is far different now that the world markets are less dynamic and internal trade is developing much faster.

The Third World peasants also have to master these new techniques faster than did their European counterparts. There are two major handicaps:

— the conception and creation of input that is right for production in the hot countries require time and, above all, qualified staff, and these are all too rare in the south;

— in traditional agriculture, input is produced by the farmer or in the village. There is no financial outlay. The rise of intermediate consumption following the introduction of modern techniques is ill-accepted by the peasant farmer, who gets the impression he is working more for the trader or the state than for himself, even if, objectively speaking, his income goes up. Note that the proper use of input goes some way to making up for the problems of the climate. But where harvests are mediocre, they run the farmer into debt instead of bringing him more money.

Lastly, most input necessary for modern agriculture is produced in the industrialized world, so it is responsible for a rightly criticized exogenous development, a situa-

ACP-EEC negotiations open in Luxembourg

J.L. Debaize – Cliche CCE

A firm and cordial handshake between A. Mogwe and Y. Haralambopoulos. In the centre, Edgard Pisani, EEC development Commissioner. Men on whom the progress expected in future ACP-EEC relations will greatly depend

Between "continuity" and the need for "radical modification" — Where will the 1985 Convention stand?

Negotiations for a further cooperation agreement between the Community and the ACP states, to take over from Lomé II, began in Luxembourg on 6 and 7 October. The occasion was marked by the admission of St Christopher and Nevis, the former British overseas territory in the Caribbean, as the 64th country in the group, and by the participation, for the first time, of Angola and Mozambique, in anticipation of their accession to the next convention.

However, although the presence of these two important southern African countries was seen by ACP and Community nations alike as a positive sign heralding better inter-African and intra ACP cooperation and signifying closer ties between these two countries and the EEC, the ACP countries regretted the absence of Namibia because of that evil policy being implemented by South Africa to prevent this country gaining its independence. The President of the ACP Council of Ministers nevertheless expressed the hope that Namibia would soon become independent. "We regret that we are still denied the pleasure of the presence of an independent Namibia among us, but we hope not for long". Mr Mogwe said.

This was the first time that negotiations have not opened in an atmosphere of euphoria or, at least, with a certain optimism, as on previous occasions. Is this because of the international economic crisis, the effects of which Europe is feeling so strongly, or is it because of the understandable wariness in the ACP group following the realization that the results of 20 years of cooperation are not terribly satisfactory? From the speeches made in Luxembourg, it clearly emerges that the ACP states are not keen to renegotiate on the sort of basis that would lead to a convention too much like Lomé and which, therefore, would be likely to have similar effects, i.e. to fail to generate genuine development of their economies over a further period of at least five years beginning in 1985. "We hope that we would not find on your side, on this occasion, a repetition of what we found when we sought to negotiate Lomé II", Mr Archie Mogwe said. The Community, on its part, is anxious to avoid both the radical changes that Mr Frisch spoke of in Berlin and "a simple extension of Lomé" that the EEC's director-general of development talked about. It does, however, want a certain amount of continuity, an idea which the ACP Council of Ministers meeting in Brussels on 3-5 October did not even wish to consider.

This time, however, and unlike at previous negotiations, the parties seem to be in complete agreement as to the nature and aims of this new-style development in the framework of their future relations. The nature of development is now *self-reliant,* concentrating on agriculture and the *processing* of ACP raw materials— hence the need for industrial and technological cooperation to be better organized, better structured and more dynamic. The aim of development is thus, ultimately, man himself, set once more within his own environment, his culture, his educational aspirations and his enjoyment of "basic human rights".

Nevertheless, the ACP states and the Community have views which, if not divergent, at least call for a considerable effort to reconcile the financial means and the ways of achieving the objectives. But this is nothing new.

(Continued on page II)

ACP-EEC Joint Committee and Consultative Assembly, Berlin

Man at the heart of cooperation (at last)?

There has perhaps never been such a fascinating meeting of the ACP-EEC Joint Committee and the Consultative Assembly as the one in West Berlin on 19-23 September. Just 17 days before the start of negotiations on renewal of Lomé II in Luxembourg, the Assembly of ACP and EEC MPs, albeit only a consultative one, lost no time in getting down to the major issues of 20 years of ACP-EEC cooperation and posing the big questions of the future relations between the group of African, Caribbean and Pacific countries and Europe of the Ten. Discussions opened in the great hemicycle of the Reichstag in Berlin after speeches by Rainer Barzel, the President of the Bundestag (the federal German parlia-

(Continued on page IX)

J.L. Debaize - Cliche CCE

Shortly before the opening speeches. Left to right, Archibald Mogwe, Yannis Haralambopoulos and Edgard Pisani

A. Mogwe:

"A crucial moment in the future of our peoples"

Archibald Mogwe, Botswana's external relations minister and President of the ACP Council of Ministers, reminded delegates in his opening speech of the spirit of the ACP countries with regard to Lomé II and of the future of ACP-EEC cooperation. As for the meagre results of the previous Conventions, these, Mr. Mogwe said, should incite the negotiators to profound reflexion, "as we have reached a crucial point in the future of our peoples", and ACP and EEC countries alike "should be aware of their responsibilities as far as these peoples and the whole world are concerned". He went on to point out that during the decade of the 1970s the ACP's GNP had grown more slowly than that of other developing countries, a trend which continued into the 1980s; and that for many ACP states per capita income has not increased at all in the 1980s and indeed has actually fallen. That ACP trade with the Community was deteriorating too. He also said that EDF resources, which had been reduced by one fifth from Lomé I to Lomé II, were paid out too slowly and that foreign development models had failed in the ACP countries. For all these reasons, Mr Mogwe called for a new convention that made for greater understanding and made it possible to change the wretched conditions in which many ACP populations lived. "The preoccupation of the ACP states with self-reliant development springs from a realisation that the foreign models of development which many of our societies have been led to embrace and implant, have failed. Attempts to supplant indigenous values and cultures by foreign ones through their technological goods and services tend only to deepen our dependence and to reduce our resilience to external shocks". "In such a state of dependency, (...) cooperation, through a new convention must alter this trend and give support to our self-reliant development through the reinforcement of our indigenous cultures".

The Zimbabwe delegation, led by Mr R. Hove, Minister for Commerce (centre); left, S.J. Mahaka, Ambassador in Brussels, and right, Mr C.M. Ushewokunze, Permanent Secretary for Mines.—An important role in bringing together Angola and Mozambique with the ACP Group and the EEC

"Comparative advantage"

Mr Mogwe said he felt that the spirit of mutual respect and genuine equality that was certainly already present in Lomé should result, in the next convention, in proper joint management of the agreement. What this meant, he said, was that "the EEC would have to show greater willingness to readjust its economy than it is doing now", so as to respond to certain ACP development demands. "What we are asking for is not a complete overhaul, the Botswanan minister said, but a commitment to restructure your economies along the lines of comparative advantage at a definite rate, giving scope for ACP expansion for exports of products—in which we possess comparative advantage".

"In the very fields in which we possess production potential and comparative advantage, we are denied the opportunity to use this potential because of your unwillingness to undertake some structural readjustment of your economies", the President of the ACP Council of Ministers added.

He gave other reasons for ACP discontent with the way Lomé II "which has not reached its objective" was implemented. On the contrary, he said, today, in spite of considerable achievements under the Conventions, "even your worst situation—be it with regard to income levels, levels of unemployment, inflation levels, etc.—is better than our best situation".

The means of a policy

Mr Mogwe insisted on the importance of the means which the next convention should have available to implement the development policy, which was intended to be more ambitious. "A principle of no less importance—and certainly one in which our arrangements so far have been seriously deficient, he said, is the need for any future Convention to ensure that there is congruency between the objectives the Convention seeks to achieve and the volume of resources it actually provides". It is true that, if attention is paid to the many critics of the financial possibilities of the various EDFs, then it emerges that more dynamic cooperation cannot survive on a fund's resources alone. So the ACP countries think that the discussion of the financial means of the next convention should not be left to the end of the negotiations, as happened when agreements were concluded in the past.

The source of financial means is also of considerable importance in ACP eyes. If we make do with the EDF, one Caribbean delegate said, in short, we are likely to have the same disappointments we had with the previous conventions. If, on the other hand, we had to sign a convention for more than five years, as the Commission would like, the EDF would

(Continued on page IV)

J.L. Debaize

J.L. Debaize

J.L. Debaize

Above, delegations from Angola (photo 1), led by Mr. Carlos Fernandes, Secretary of State for Cooperation (not in photo) and Mr França Van Dunem, Angola's Ambassador to Portugal, and Mebiana De Almeida of the Ministry of Planning; and from Mozambique (photo 2) led by M. Rui Baltazar, Minister of Finance; right is Mrs Frances Rodrigues, director of International cooperation.Opposite (photo 3), Mrs Amelia Ward, Liberia's Deputy Minister for Economic Affairs and Statistics, whose contributions during the ACP Council of Ministers held on 3-5 October attracted much attention. Below, (photo 4), the Cameroon delegation, represented by G. Bol Alima, Minister of Industry and Planning (right) and Jean Keutcha, Ambassador to the Benelux and to the European Communities

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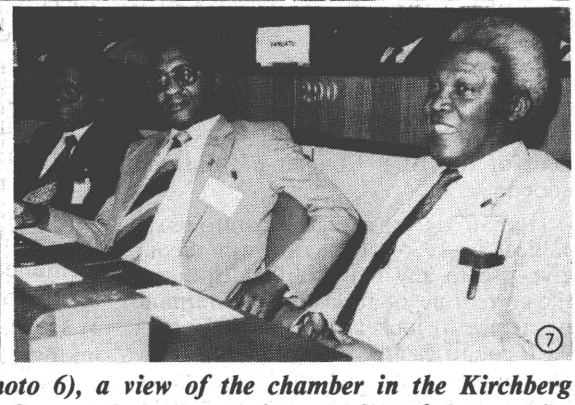
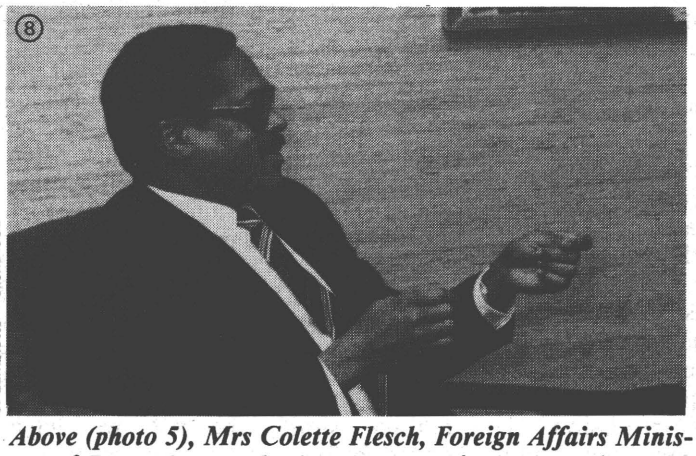


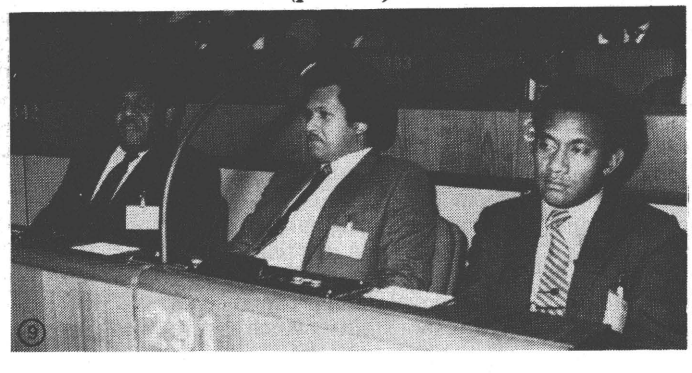
J.L. Debaize

Above (photo 6), a view of the chamber in the Kirchberg European Centre where the opening meeting of the negotiations took place; and Zambia (photo 7), represented by Dr H.S. Meebelo, Minister of the National Commission for Development Planning (centre), S.J. Kazunga, Ambassador in Brussels (r.) and K.S.B. Nyirenda, of the Ministry of Mining. Below, the representatives of Vanuatu, Pacific (photo 9)



C. Lambiotte – Cliche CCE

Above (photo 5), Mrs Colette Flesch, Foreign Affairs Minister of Luxembourg, the host country, in conversation with the Belgian delegation, led by Mr Leo Tindemans (l.), Minister of External Relations. Above (photo 8), Mr Maurice St John (Trinidad and Tobago), one of the representatives of the Caribbean



J.L. Debaize – Cliche CCE

soon appear to be inadequate. A simple fund does not have the constant and lasting flexibility that Mr Pisani talks about. This is why we have come up with a project for a bank which would enable us to tap more resources from the international capital markets for sustained, long-term programmes", he said. But are "the ACPs crying for the moon"?, as one British MP put it in Berlin.

Mr Mogwe also said that the ACP countries were "aware of the difficult period through which the international economy and the economies of the Member States are passing", but "if we, ACP and Europeans alike, are here together, it is because our predecessors preferred cooperation to confrontation" and "this spirit of Lomé should help us make a great leap forward", he added.

Lastly, the President of the Council of Ministers had a clear position on "the much touted question of human rights", which was also the subject of considerable discussion at the start of the Lomé II negotiations. We are strongly in favour, Mr Mogwe said. "We of the ACP have never concealed our strong and unfailing commitment to that ideal. The record of Lomé II confirms this. That we have not considered it desirable, however, to enshrine this concept in the Lomé Convention is due rather to the inappropriateness of the Lomé Convention as an instrument for its expression and implementation, than to the irrelevance of the concept or to any attempt on our part to evade its imperatives". "But let us assure you that we are prepared to discuss this question just as we stand ready to discuss the nature of the Community's relations with South Africa", the President of the ACP Council of Ministers added.

Human rights, a highly controversial subject in 1975, should not, in theory, give rise to any major difficulty during the current negotiations if the Community agrees to look at apartheid. For the ACP countries are willing to admit now, particularly since the problems experienced by some of the African régimes and the OAU's adoption of a human rights charter, that they could have, in certain cases, also to remove the beam from their own eye.

Y. Haralambopoulos:
"Shared responsibility"

Replying to Mr Mogwe, Mr Yannis Haralambopoulos, Greece's External Relations Minister and President of the Community's Council of Ministers, reasserted "the Community's fundamental political commitment to ACP-EEC cooperation and the special and original position we intend it to occupy in our relationship with the developing world." He said he felt that "development and growth are a shared responsibility which can be exercised only on the basis of a partnership between equals with full respect for the sovereignty and political and economic choices of all concerned". He reminded delegates of the difficult economic environment in which the negotiations were to take place, saying that the Community was anxious to complete a new convention which would both reflect "continuity" with previous conventions and give a fresh stimulus to ACP-EEC relations by adapting Lomé and its instruments in the light of experience, trends and the economic situation in the Community and the ACP countries as well as of a desire for external aid to be more effective. The President of the EEC Council of Ministers also insisted on "the Community's wishes to reaffirm" to the ACPs "its commitment to the resumption of the North-South dialogue". "The Community, dependent on the Third World for the bulk of its raw material and energy imports and for 40% of its external trade, is more aware than any other industrialised entity that development is a duty dictated by solidarity as well as being mutually beneficial". But "despite inevitable difficulties and differences of opinion, Mr Haralambopoulos added, "the essential fact is that our cooperation is above all a work of solidarity and progress (...), a work of dignity and of equality between our peoples and our states".

As Commission President Gaston Thorn was unable to be present, Edgard Pisani explained the philosophy and the approach which the Commission, which would be negotiating on the Community's behalf, felt should underlie the discussions. Highlights of the development commissioner's speech follow.

The EEC (Commission) and ACP (Committee of Ambassadors) negotiators are scheduled to meet again in early November and a further ministerial meeting will be held in mid-December "if genuine progress has been made by then", Mr. Mogwe warned. o

LUCIEN PAGNI

Edgard Pisani: "Let us improve... and extend it where necessary"

Below are highlights of the speech delivered by the development commissioner in Luxembourg.

The juncture is too difficult and too many important people have taken the trouble to come to this gathering for us to avoid some clear thinking about basics. We are on stage, and our performance has important implications for the other actors on the international scene. Should we fail in our undertaking, the last forum for collective cooperation will disappear. But should we overcome the difficulties, we shall have shown that the North-South dialogue is more than a fond dream.

The Commission has a mandate from the Council, based on its own directives, to negotiate on behalf of the Community. It attaches the highest importance to these negotiations and it is to the great regret of Mr Gaston Thorn that he is unable to be in Luxembourg today as he intended. He asked me to represent him and has accorded me the privilege here of speaking for the Commission, the privilege and the responsibility, and in that capacity, I should like to convey you his views regarding the practical aims of ACP-EEC cooperation, the future and proper role of the instruments of the convention, which for the sake of convenience and emblematically I shall continue to refer to as such, and the spirit of the pact which binds us and, if we are successful, will continue to bind the 63—soon to be 65-ACP states with the Community.

However, I should be failing to do justice to our conception of our political, cultural and economic relationship were I not to say first, in answer to President Mogwe's remarks in Berlin on 22 September, that these *will* be real negotiations, between equal partners able to enter freely into commitments.

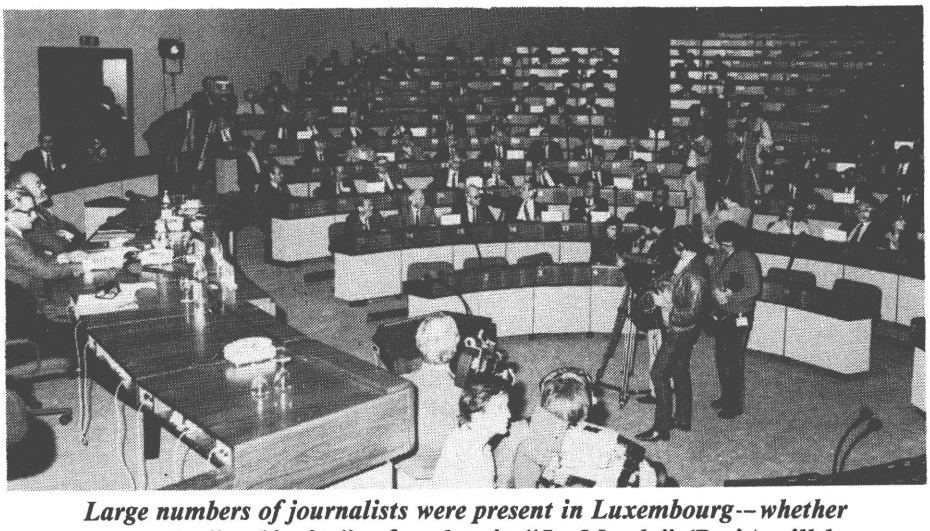
It is because of this freedom that the negotiations will be hard and full of contradictions. They will call on the spirit of solidarity when the facts often show dependence, they will assume the existence of an international order when all is disorder and conflict.

"Because it is in our interest to do so"

History, friendship and habit are not all-compelling, and we shall sign nothing simply because we have signed before, or because we cannot *not* sign; we shall sign because it is in our interest to do so. Without the right to say no, our assent would be meaningless.

These negotaitions give a special opportunity for a debate on fundamentals, with the happy ending by no means a foregone conclusion.

If I raise here the possibility of failure as inherent in the nature of these negotiations, it is by no means that I am pessimistic. Unless we accept this risk the convention, which is a model but an imperfect model, of Community-Third World relations, will cease to evolve and will ultimately degenerate into an administrative instrument, less and less worth administering as time goes by.



J.L. Debaize – Cliche CCE

Large numbers of journalists were present in Luxembourg – whether or not the "ambiguity" referred to in "Le Monde" (Paris) will be dispelled remains to be seen

To accept the risk of failure is to accept a discipline without which neither side can hope to advance along the path of development and dialogue between North and South.

"What is at stake"

Failure would not be the end of Europe, but there is a sense in which it would be the end of the Community; it would not be the end for the countries of Africa, the Caribbean and the Pacific, but in another sense again it would be the end of their hopes of progress within a North-South relationship free of the alarums and excursions of East-West confrontation. This we have in common. Thus our destinies are bound together.

But the Community can have no political, economic or strategic future in a world polarized around the superpowers, unless it can forge a special positive relationship with the Third World. It might continue as a trading power, but it would have no existence in political terms.

That is what is at stake for Europe in these negotiations. As negotiator on behalf of the Community, but also by conviction and responsibility as mediator, the Commission is prepared to contemplate the sort of solutions we need to get an ambitious convention, a convention for these times we live in.

This is what the European Parliament wants, and the member governments too, but that being so I shall sometimes have to say that we are going in a direction contrary to the Community's interests, contrary to the spirit of the treaties on which it is based and contrary to our partners' fundamental needs. In that case, however, we must say quite specifically what interests we are talking about; some interests we can quantify, and they count, but they are not the whole story.

In a world which is more complicated than ever before, and in perhaps the most hostile economic climate of modern times, the convention can be seen as a vital, irreplaceable source of stability and security; from that point of view its existence is more important than its content, and its nature more crucial than the resources it makes available.

The ACP themselves know full well that the Convention accounts for no more than about 10% of the Community countries' total development assistance and cooperation budget.

Thus the exemplary force of Lomé has nothing to do with the amount of money available but with the crucial fact that this vehicle which carries all the instruments of cooperation is the result of negotiations in which the ACP states bargain as a group.

And as I said at Kingston and say again here, the unity of that group is a political fact which the European Community has neither the power nor the desire to weaken in any way.

"Neutral, predictable, long-term"

The renewal of the convention therefore provides the ACP States with an exceptional opportunity of negotiating with all the countries of the European Community a neutral and predictable long-term, inter-regional economic order.

The neutral approach to development was something deliberately chosen by the Community members, but also the inevitable corollary of the time-scale in which we are operating, which rules out any ideological slant.

Listening to President Mogwe speak in Berlin, I was struck by the fact that the time factor in our cooperation has rather been left out of account, and I wondered about the implications of an offer on duration unconnected with any more demanding concept of our relationship. *Per se,* a permanent convention is neither better nor worse than one of limited duration.

Permanence is only possible once we have forged fundamental agreement on what development is all about, on long-term priorities, on how we should approach North-South cooperation, and co-exist and cooperate to promote the welfare of our citizens and enable them to flourish.

There is a fact which the UNCTAD VI negotiators in Belgrade failed to act on, and it is this: the crisis we are facing today requires more than a little fine-tuning to accommodate various factors; it is a structural crisis, after which the world will be a different place, with wealth, knowledge, power and peoples distributed differently.

We are beginning to see certain patterns emerging: the powerful, the United States, Japan, the Soviet Union for instance, have increased their power; older powers, like Europe, facing the twofold challenge of recession and international competition, but with a legacy of history, experience and knowledge of the world, are still casting around for a new role. New powers, Brazil and the South East Asian countries, are emerging, with all their contradictions and their precarious new industries. But some countries, the countries of Africa, the Caribbean and the Pacific, seem not to have been dealt into this new game; is the recovery which seems to be dawning beyond the recession to pass them by?

Who, if not the Community, will make the necessary effort to consolidate, strengthen and spread the recovery to the countries of the Third World? And if it fails to make the effort, can it benefit from the recovery itself? In its own interests and in recognition of the complex process of recovery, the Community holds fast to the concept of interdependence which recently received the backing of the OECD, seeing it as the only logical and positive way forward.

The Community will be working for the establishment of an international economic order in which the logic of interdependence will prevail over that of conflict. It therefore intends to use these negotiations to conduct a dialogue with the ACP on the aims of cooperation, the future and proper function of the instruments of the convention, and the spirit of the pact which binds us.

The objectives of cooperation are manifold. First of all, there is the development of the ACP countries—an immense undertaking; then there is the strengthening of the relations that make the ACP the Community's clients, and in this sphere, provided that the will is there, there can be joint undertakings in our mutual interest which as yet remain but dreams.

"The prime objective"

The development of the ACP countries constitutes the prime and most obvious objective of our common task. This is what European opinion focuses on and what is debated in Parliament. Real feeling goes into this and the disappointment is great that there is so little to show for so much effort over so many years.

Contrary to what one tends to hear, the average European has not become selfish; quite the contrary—he has become exacting. He is determined that his contribution—and there is no reason why it should not be a larger one—should produce better results.

For, in general, international cooperation has borne disappointingly little real fruit: poverty, sickness, malnutrition, illiteracy have scarcely abated, the desert has not yielded, and the major constructions to which external aid has contributed are still all too often like monuments to the glory of technicians, officials, bankers and governments, with little real effect on the fate of populations.

Critics decry this waste and, by implication at least, accuse the peoples who have not been able to take advantage of the tools which they have been given. Their criticisms are exaggerated and in their ardour they ignore all the real achievements of cooperation.

The fact remains that without major changes ACP-EEC cooperation will soon appear to be useless through its failure to get to the roots of the ills that it sets out to alleviate and cure.

The aim is not to sign a few cheques in order to salve one's conscience and create a circle of clients: the aim is to contribute to development.

To come to grips with this difficult problem, the Commission published a memorandum in 1982 containing some new ideas which the Council subsequently adopted and which—so that no misunderstandings remain—will need to be discussed.

The Community would suggest that both sides should reach agreement on the very objectives of their cooperation. It is not surprising that we have waited so long before doing this. We have to accept the fact that it was impossible to do it earlier, owing to insufficient experience.

But the time is now ripe for agreement on our aims. Those that the Community is suggesting bear a close family resemblance to the ones in the Lagos Plan and to those set out by the Caribbean and Pacific states in the guideline documents they have drawn up together. If we had to sum them up in a single sentence we could probably say that Europe wishes to contribute in each country and in each region to overall economic and social development, that in the majority of cases it is clear to us that such development should give priority to and be organized round small-scale farming but could obviously extend beyond this, that it calls for methodical use of natural, cultural and human resources, yet also for the convergence of all internal policies and external efforts. Self-reliant development and integrated development. Agreement, so I am told, will be easy to reach round the conference table, but will everyone be willing to accept all the implications?

"Is the Community ready?"

Is the Community as ready as it claims to foster a policy under which food aid will be devoted to developing production in the beneficiary countries, with all that this implies? Are European firms likely to accept without a murmur that the major works in which they excel should give way in many cases to small works that will require a considerable adjustment on their part and will encourage the creation of local firms?

Are Europe's doctors and engineers willing to concede that their science is expensive and often unsuitable, that the day of the resourceful small farmer, the on-site foreman and the skilled worker, has arrived?

Are European officials, accountants and auditors ready to close the ponderous, impressive files on which their reputations rest and turn their attention to a multiplicity of projects and schemes which will later tax the capacity of some worthy judge when the time comes to assess their merits? Are delegations prepared to evolve beyond the point they have reached and to gear themselves not to accounting rules but to the living reality? Are those responsible for our budget ready to accept that this approach to real development is labour-intensive, that it requires both instant and long-term flexibility, since nothing escapes change?

"Not to boost the central administration, the city, the ruling élite"

And do you feel ready to agree that our modest contribution is designed not to boost the central administration, the city, the ruling élite, the state industries, but to spread its effects as far as possible through the body of society and bring about that awakening without which development is impossible? Are you ready to cede that our ECUs are not there primarily to solve your urgent balance of payments problems, but to be spread further and higher so that new balances can be struck?

Are your governments ready to believe like us that new facilities are not necessarily synonymous with development, that the latter calls for rigorous consistency, a carefully wrought harmony between internal economic policies and external aid? Are all governments willing to admit, once and for all, that the proliferation of state industries does not, unaided, create either socialism or a healthy economy but simply leads to more bureacracy, which it has become imperative to halt?

"The ingredients of the dialogue on policies"

If we face the situation as it really is,

we can clearly see what are the likely ingredients of the dialogue on policies that the Community is proposing to each of its partners as a working method and as an indispensable forerunner to decisions.

It will not be aimed at changing the identity of the person who decides. Its purpose will be to prepare the ground better for decision making and to gear national and regional policy more closely to the aids which underpin this policy.

We could have said more simply that we were suggesting some changes in programming methods, which all would agree have hitherto been inadequate. But we wanted to go farther and to emphasize the importance of dovetailing our aid with national policy; it is this which remains at the core and which needs to be strengthened.

And if some doubt still exists concerning the dialogue on policies—and I beg the interpreters not to translate this as "political dialogue" or "politischer dialog"—then it is enough to take a close look at the slow and vigilant establishment of food strategies, for here a national policy[i] once thrashed out has enabled aid which had hitherto been sporadic and of little effect to be focused, organized, made effective and expanded.

I would add that for me dialogue does not mean monologue. The Commission, which is responsible for the implementation of the convention, is expecting some real and difficult debates; it is expecting some brickbats. It will turn these to good account so as to move towards greater effectiveness and more sensitivity to the needs of its partners.

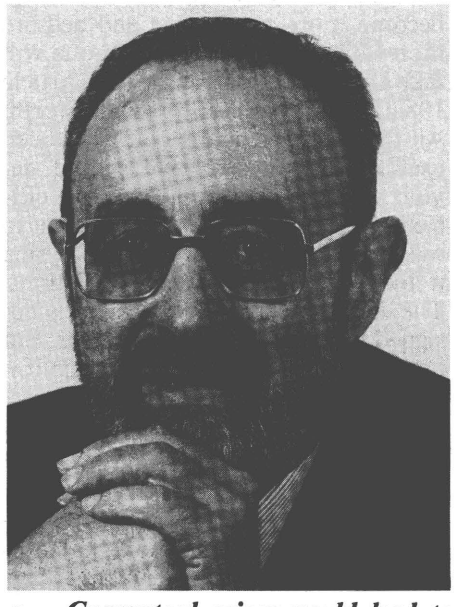
(...) There are, however, some objectives that are scarcely mentioned and to which the countries of Europe are entitled to pay close attention. As President Mogwe declared in his speech in Berlin on 21 September: "Neither side, ACP or EEC, has participated in these historical arrangements simply for the benefit of the other.

Nor will either side continue to participate in such arrangements if its own vital interests are not adequately provided for or safeguarded. This recognition calls for a clear vision of how the future cooperation is to be established".

"Cooperation has created or protected more jobs in Europe than it has destroyed"

Let us be frank. Europe feels that the special relationship binding it to the ACP countries must bring some returns to its own economy.

It is beyond question that such has been the case until now and that cooperation has created or protected more jobs in Europe than it has destroyed.



«... Guaranteed prices would lead to guaranteed quantities. It would be dishonest to allow it to be thought that there was any possibility of this happening»

Perhaps it should be pointed out that it is unfair to blame Europe for this. For each ECU of aid it contributes, it sells ECU 10 of goods and services to the developing world as a whole. But for the same ECU, Japan sells ECU 20, the United States ECU 22 and the Eastern trading area countries ECU 75.

What is needed—and the negotiations will offer an excellent opportunity for this—is a much more detailed analysis of our trade. We must also see where and how we can provide greater access for ACP products and services and also how, by adjusting more closely to ACP realities, we can meet their needs and make headway over our competitors.

However, there are some spheres where, in the framework of our cooperation, and drawing on the convention for support, we should in our mutual interest be able to do much more than we have till now. This is the case with fisheries, energy and mining, and here I would add that though Sysmin does exist, it will be agreed that it is more in the nature of an instrument against the recession rather than a tool for development.

Something entirely different could be developed. The ACP have resources that are frequently under-used. Europe has needs that are frequently not met. Can the ACP countries and Europe, working alongside the convention and using some of its instruments, initiate activities in their mutual interest? Has the time not come to set up agreements ensuring development for the one and security of supplies for the other? The Commission hopes to demonstrate, through the studies it is carrying out and the proposals it will make, that the ACP-EEC relationship goes beyond the convention and that the convention has provided a setting propitious to many undertakings. The Commission is inclined to believe that were Lomé to be nothing more than the convention, were the convention unable to provide the springboard and starting-point for a many-sided cooperation, it would cease to provide a common framework linking under-development, unequal trade and instability. (...)

"The convention's instruments and the best way of using them"

This incursion, or rather excursion, into the realism of the possible and the desirable could shed light on a sensible approach to the convention and the instruments which it has created.

By expecting more of Lomé than it has so far yielded, we are not criticizing its achievements; on the contrary, we are using it as a springboard for further progress.

This must be stated in the plainest terms. In all the disillusion of the North-South dialogue, Lomé remains unique, and though no part of it is exempt from critical analysis, there is nothing which deserves to be challenged in essence. Let us improve it by all means, let us extend it where necessary, but let us not aim to start again from scratch. Such a move would involve more risks than potential benefits.

The next convention's financial package

This brings us to the Commission's views on financial and technical cooperation and on Stabex, its concern regarding cultural cooperation and the institutional operation of the convention, and furthermore, its views regarding the total financial package which could or should be mobilized.

Let us proceed without further ado to discuss this sum. It must reflect the

situation in Europe, not only Europe as it is now but as it is striving to become in five or ten years' time, because, let us not forget, the convention will take effect in 1985 and run until 1990. (...).

Europe must stop and think and not prolong the rigours of a time of crisis into the more favourable period which is universally expected to follow recovery. Development aid could, after all, be regarded as an extension of such recovery.

Above all, though, a major effort must be made to improve the efficiency of our financial instruments. While the administrative rules governing their operation must continue to be strict—in the interests of both sides—it is clear that in the procedures involved there must be continuing movement towards greater flexibility and speed of operation. Particularly careful work will be required on programming, which represents the moment of truth for all concerned. For the ACP states it is the test of whether a list of projects corresponding to heaven knows what priorities can be fashioned into a programme which is at once an instrument and a buttress of a policy.

Accordingly, we must join with the ACP countries in devising procedures which take account of administrative realities different from our own. The negotiations should provide the opportunity to review procedures in order to ensure that the system introduced combines security and effectiveness.

Many of the criticisms made of the EDF are unfair, but none should be rejected out of hand.

The aim is not to make the new convention a straitjacket, paralysing the system by sheer precision of detail; on the contrary, we should like to see a body of simple, clear rules setting out responsibilities and leaving scope for initiative.

In this context we cannot avoid the issue of what some people call joint management. Whereas the convention is negotiated and approved collectively, the EDF operates through direct dialogue between the Commission and each individual ACP countries taking part in this dialogue and the structures necessary for them to do so?

The advocates of joint management should give careful thought to the risks involved in a system in which the ACP states could emerge as censors of each other's actions.

No, we should turn our minds to other things, and concentrate on improving the form and *modus operandi* of the institutional system as it stands at present. The development of the Consultative Assembly and the Joint Committee is under way. Clearly, the work of the Council of Ministers must become more productive and acquire more substance, otherwise no-one will take any further part in it. The Article 108 Committee has shown its worth. All the meetings held so far have been useful and intensive. We should devote our efforts to improving the efficiency of this system rather than to overturning it and perhaps paralysing it by creating built-in contradictions. The collective ACP-EEC system is designed to plan, direct and evaluate, but not to administer. It would be lost if it tried.

As regards the EIB, the Commission hopes it will be in a position to play a fuller role in the necessary dialogue with the ACP States so as to improve the overall effectiveness of the Community cooperation instruments.

I intend to say very little about Stabex, as only detailed discussion can lead to improvements. It is a good system, whose effectiveness has temprarily been impaired by the disordered state of the world and which obviously cannot compensate single-handed for the international situation.Two current ideas for combating the present difficulties are viewed with the most serious reservations by the Commission. The Commission does not consider that it is the function of the convention, which links the Community with 63 developing countries, to establish a system of guaranteed prices for exports of ACP products to Europe.

Even if the Community were tempted to do so, it could not and should not for the sake of its partners. Guaranteed prices would be liable to cause European buyers to turn away from their ACP suppliers, something they are already all too inclined to do, and as a result the guaranteed prices would lead to guaranteed quantities. It would be dishonest to allow it to be thought that there was any possibility of this happening.

Any expanded version of the sugar agreement is unthinkable. It would in any case be impracticable since, while in the case of sugar there are internal European prices to serve as a reference, there are no such prices for most other products.

The sugar agreement is not in question, but it is high time that we were able to exchange views on it in other forums: the system must change if it is to be truly effective.

A second commonly-held view is that an increase in the funds allocated to Stabex would resolve all the problems. The Commission will not go as far as to say that increased funds would be liable to hinder the operation of the system, but it is convinced that, even with more funds, the system would encounter problems if the ACP countries' system of production continued to deteriorate. The real cause of Stabex's decline is the decline in the ACP countries' system of production.

A detailed analysis, the conclusions of which have been published by us, shows that the ACP countries (in Africa in particular) are losing market shares to competition from South American and South-East Asian countries. How can the competitiveness of the production system be improved and the system restructured where necessary? If we were in a position to provide clear answers to these two questions, the resources issue would look quite different.

We should guide all our efforts towards development. Yes, all for development, without which the scourge of hunger would remain, without which cooperation would be laughable and could have no future.

How could such a detailed discussion on the conditions and means for relaunching the ACP countries' economies ignore the obstacle to development represented by Third World indebtedness? We cannot claim to be able to offer a solution; our aim is to estimate the scale of the problem and the difficulties it creates for the development of trade. Whether or not it is reffered to openly, debt will loom over the negotiating table, so we may as well discuss it for a moment to say what there is to say.

No-one would dream of denying the principle of repayment of debt; nevertheless it is worth registering the fact that the size of the debt has been one of the factors in maintaining a substantial rate of activity in the industrialized nations and that without the debt incurred by Third World buyers, unemployment would have been even greater in Europe; when considering this debt, then, it is the future of its own production activities which the West is concerned with. The Lomé Convention does not deal directly with this question, but Europe must, if it is not to deny the spirit of Lomé, acknowledge and even take into ac-

count in the procedures governing its financial aid a problem which is besetting many governments and represents a threat to their future relations with us, since it represents a threat to their very future. In other words, in this respect as in others, Lomé is more than a convention, more than a legal text, it is an iedea, an expression of will.

Lomé is not the world, and a convention, however fine, cannot replace the necessary dialogue between North and South or be the sole vehicle of the fact of interdependence; however, Lomé can be, must be, an example of long-lasting, reliable, equitable relations between regions, based on respect by each for the ideological choices of the others.

This, too, is the spirit of Lomé.

Without Europe, the African, Caribbean and Pacific states would lose invaluable support; without the ACP states, Europe would lose the dimension it wants and must have.

The only future for our peoples is to reject the inevitability of clashes between East and West (in which their only role is as detonators or battlefields) and to focus on this community of interests without which they can achieve nothing.

"A far-reaching innovation"

The convention is not, and cannot be, merely a network of legal, financial and technical links between states. If that were all it was, if it neither engendered nor fostered economic and trade relations and initiatives to make these states' economies more complementary, if it did not set in motion—apart from the machinery of state—all operational capacities, the convention could merely remain in the realms of diplomacy, and not achieve its objective, namely that of forming the nub of a coordinated effort to promote synergic growth. The path of cooperation leads from the financial to the economic, from the economic to the general, including the cultural dimension. Development cannot be reduced to a collection of imported objects and artefacts but is based on people and societies and mobilizes their creative abilities and organizational systems. If they do not wish to be subjected to this reductionist process, the countries of the Third World must rely on their own strength, making choices based on criteria and objectives which they have established for themselves. This is what will give authenticity to the development process, by adding to it the aspects of culture and environment, which are all too often ignored or neglected. It is based on education, science, technical know-how, as an added dimension to identity, culture and individual characteristics. The South, without denying its own identity, will in this way become the proper interlocutor which the North really needs. Only then does the message of joint development acquire some meaning. To introduce culture as a substantive aspect of our relations with the Third World, and in particular of the contract linking us to the African, Caribbean and Pacific countries, will be to make a reaching innovation, for it will give the cultural project and intercultural dialogue a central place in our cooperation.

Cultural cooperation does not in any way entail—in our view— introducing specific instruments but must be considered as the objective which gives the Convention its full meaning.

This is not merely an axiom: the only way to guarantee the cohesion and effectiveness of all our action is to make man in all his ethnic, cultural and religious diversity the agent as well as the beneficiary of development.

The ACP states must understand that when we talk of man, we are also, given our tradition and culture, thinking of human rights.

Our aim in seeking to discuss this subject is not to lecture on it. It is not even to claim that our system is the only possible one, but to seek, through discussion, mutual understanding, and determine that in this essential sphere we share the same concern and are engaged in the same search.

Men will conduct the campaigns to protect and develop the natural heritage, including forests, women will be the agents of the change in social circumstances, in the family's way of life and in the children's education, and the small farmer will be the hero in the fight against hunger and malnutrition and consequently in the industrial development of the Third World.

If we did not take this human dimension into account, our development policy would not only be devoid of hope, but would have no meaning.

Since during these negotiations, (...). we have to raise and discuss some essential topics and formulate some guidelines which go beyond immediate requirements, we can ask ourselves whether we have the ability and hence the duty to create more lasting links between our countries. Money is useful only as long as it is in circulation to encourage trade. Agreement on objectives can create links of a totally different kind, the very links that we are all seeking.

During the months of negotiations we shall, in fact, have to answer only one question: is the convention a financial contract or a policital pact?

For the Commission it is a political pact which helps to define Europe and hold the world in balance, and the means at its disposal should be adapted to that end. o

EDGARD PISANI

Consultative Assembly

(Continued from page I)

ment) and R. von Weizsäcker, the mayor of Berlin. They centred on the Cavalevu report on implementation of the Lomé Convention and the outlook for negotiations for a further agreement, the Fuchs report on industrial cooperation, the Ferrero report on world hunger and the Chasle report on cultural cooperation and the situation of ACP workers and students in Europe. The world population situation, various problems of the ACP countries of the Caribbean and the future of the institutions themselves were also discussed.

Cavalevu Report

Mr Cavalevu outlined the situation before the general debate on his report, being anxious to make the Berlin meeting particularly significant when it came to discussing trends in Lomé II and the new deadlines for working towards the next ACP-EEC cooperation agreement. "The political importance of this meeting", he said, "lies in the approach to the negotiations and we must take this opportunity to hold a frank duscussion of all the problems attached to the future relations of the two parties". Mr Cavalevu, who has also been Chairman of the Committee of Ambassadors since 1 September, dealt with the basic subject-matter of his report first, saying that what typifies the way Lomé is implemented, procedurally speaking, is the "absence of concertation"—which is due to Europe—between the ACP group and the Community. He mentioned a large number of cases in which the Community had refused consultation, particularly over the su-

gar issue. He then said he wondered whether the provisions of the Lomé Convention on the joint implementation of the agreement should still be considered to be part of it!

Mr Cavalevu stressed that financial cooperation fell short of ACP needs. The resources of the EDF, he said, were allocated for a five-year period, but they were disbursed over ten years and maybe more. So Lomé II funds were, in fact, of the same value as Lomé I funds, although they had to cover a larger number of beneficiaries. Mr Cavalevu then devoted the greater part of his explanatory talk to the outlook for negotiations for the next convention.

He felt that a certain number of the "present shortcomings" of the Lomé Convention arose from the fact that there was no definition of overall objectives that took account of "the ACP people in their economic and cultural environment" with a view to achieving the sort of economy that caters first and foremost for their daily aspirations. This basic weakness of the Lomé Conventions, he felt, was due to the "total lack of understanding between the European and the ACP partners". Although the texts of the various agreements underline the importance of "mutual interest", there is no mention of the "mutual understanding" that is a condition of any far-reaching cooperation. Interests are often contradictory, even if they are mutual, he said, expressing the hope that the next ACP-EEC agreement would have as its basis a definition of the aims of development, that did not destroy the cultural environment that was the fundamental difference between Europe and the ACP group of states (see page 3 the interview in which Mr Cavalevu develops the keys ideas of his report).

The response to this revealed a considerable convergence between MPs' views and the views of Mr Cavalevu as to the need to rethink the methods of development in the next convention. The Commission of the European Communities is also in agreement here.

Both ACP and EEC countries agree that the Lomé Conventions, in particular, "have not achieved their principal objective of giving the countries the means of building an expanding economy rather than economies that deteriorate and fall apart over the years", said Raymond Chasle (Mauritius). Particularly in agriculture, where the ACP countries have moved from self-subsistence to total dependence on the industrialized countries, Mr Sablé (Lib., France) and Mr Vergeer (EPP, Netherlands) added.

But it was Mrs Katharina Focke (Soc., Germany) who took up the idea that the meeting was an opportunity to think about the future in terms of progress and she called upon MPs, Member States and the Community to remember to continue with implementing Lomé II. This convention has to be pursued assiduously until it expires, she insisted, going on to set the debate against the background of the current economic situation in the ACP group and in the international environment and asserting that the poverty of the ACP countries and the rest of the Third World and the failure to progress with disarmament would be with us throughout the negotiations we are about to start for a new convention. But, she went on, this would be a real test of the Community's political desire to fulfil its commitments to the future of the ACP countries. Mrs Focke then went on to emphasize the importance and the value of future ACP-EEC relations. "The quality of cooperation will be fundamental to the success of the next convention. We must not simply write a fine preamble and some tightly worded provisions which lead to nothing or next to nothing", she said. But the problem of quality does not rule out a quest for quantity. The two must go together, Mrs Focke said, although she did not claim that the previous conventions were totally lacking in this respect. "There was adequate content and they could have brought more than they did to the recipients". If today we think that this is no longer the case, then we are all to blame, she said, speaking to the ACP countries as well. She took Stabex, the subject of a good deal of discussion, as an example, saying that, in her opinion, the problem was not primarily one of the resources of the system. "Have we thought about the way the sums allocated are used or about the factors of Stabex intervention?", she wondered. The guideline for the forthcoming negotiations should be quantity, of course, Katharina Focke said, but it is the quality of what we do that is the most important thing. However, in the discussion of Stabex that was at the centre of much of the debate on the Cavalevu report, Mr Vergès (Com., France) stressed the 20% drop in transfers from Lomé I to Lomé II. This, he maintained, was a failure, even if it was agreed that it was only a partial one. He reminded participants of the promise the present French government had made to reach the 0.7% of GNP target for development assistance and he said he hoped to see Europe channel 1% of GNP into the economy of the ACP group, as the ACP-EEC Consultative Assembly had requested, and that the next EDF would amount to at least ECU 8 000 m so as to achieve the aims outlined during the debates. He then underlined the importance of setting up an ACP-EEC development bank.

Ulrich Irmer (Lib., Germany) also pointed to the partial failure of the present Convention. Wondering about the causes, he suggested that the approach by economic sector that was typical of Lomé II should be abandoned. What we need, he said, is to bring all development schemes into a global vision of the development of each ACP country or region, so as to make for more coherent organization of society and the economy that will lead to a genuinely comprehensive social plan. He reasserted his commitment to the campaign to get the means of financing development increased. It was a mistake, he said, to claim that, in times of crisis, the finances channelled into development had to be cut. On the contrary, this was the very time to increase them.

Including the EDF in the budget

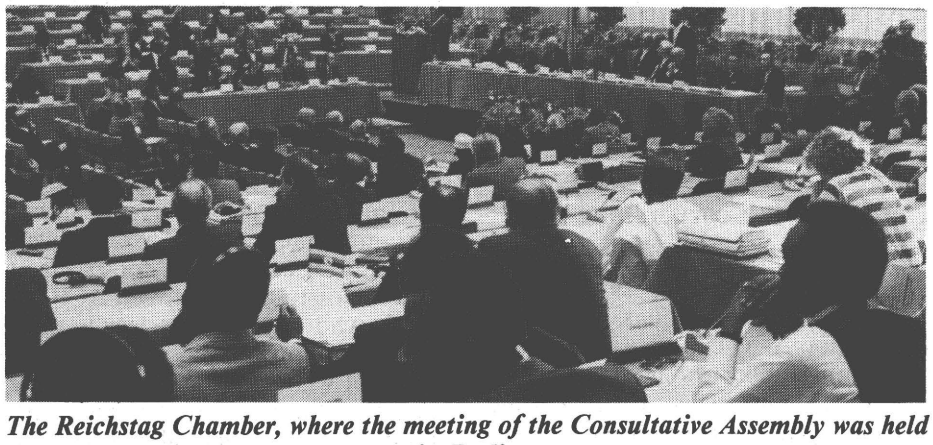
Mr Irmer underlined the fact that inclusion in the Community's budget would make for greater flexibility in managing the EDF and he asked the ACP countries to give their support to his idea of doing this next time. "It would have been much easier to solve the problems we are now having with Stabex if we had budgeted the financial means of cooperation", he said. "It would have been easier to switch transfers from one item to another".

However, it is worth noting that, although most of the ACP and EEC MPs were in agreement about the unsuccessful side of cooperation and the need for future conventions to be better adapted to ACP requirements, the British conservatives, and Mr Pearce in particular, were keen to point to the ACP countries' own responsibility for this much-described failure. "What are the ACP countries doing about their own development?" asked Mr Pearce, "Trade, not aid" the conservatives say maintaining that trade is much more important than financial resources.

In the absence of Edgard Pisani, Dieter Frisch answered some ACP criticism about trade and Stabex. Mr Frisch, director-general for development at the EEC Commission, said that the most important thing was to uncover the real causes of the crisis in the export earnings stabilization system. The debate on the resources and functioning of the system (particularly the methods of transfer, which had been the subject of considerable criticism) was well-founded, of course, but it did not explain all the problems Stabex was having.

What are the objective causes of the Stabex crisis? That is the question and it is a question that has to be answered if we are to get a better grasp of the suitability or unsuitability of the Stabex machinery.

Mr Frisch went on to ACP trade with the EEC, something which is related to the Stabex issue. He felt that both sides were to blame for the drop in ACP exports on the Community market and that there was no point in continually insisting on what Europe did or did not do and forgetting that there were inadequacies on the ACP side too.



The Reichstag Chamber, where the meeting of the Consultative Assembly was held in Berlin

Co-managing or not?

The management of financial cooperation is also the subject of a good deal of criticism, but, Mr Frisch made clear, it is done on a joint basis, in accordance with Article 108 of the Convention. "It is not, essentially, Europe that defines the objectives under Lomé", he reminded participants. "Do the ACP countries make a better job of co-managing World Bank or IMF funds because there is a representative of each of their countries and regions in these bodies?" he asked.

Mr Frisch answered Katharina Focke, approving her idea of stressing the quality of cooperation too. The dialogue on policy which the Commission had advocated, he said, was a step towards higher-quality cooperation as it was a search for greater coherence between ACP national choices and what the Community could provide in the way of means to improve the development of these countries. The Community's every aim would be to encourage global development projects in each ACP country or region, Mr Frisch added, so the EEC was anxious to join with the countries in question to seek ways and means of establishing such an overall strategy. Hence the need for a dialogue on policies and for the sectoral programming of development projects.

Mr Frisch went on to deal with further criticism about the way the Lomé Convention was implemented. In particular, he took up what Mr Vergès (Com., France) had said about sugar, to the effect that it was a test of confidence between the Community and the ACP group. Mr Frisch said that the sugar Protocol was not part of the Lomé Convention. "The sugar Protocol may change, but the chances of making any fundamental alterations are not realistic at the moment", he said.

Industrial cooperation — agreement on the substance but divergence on the means

There was lively discussion when the Cavalevu (Fiji) general report was presented in Berlin, the criticism proving exaggerated for some and the frustration of 20 years of cooperation proving too great for others. However, discussions, whether of Stabex or of trade, remained more theoretical than practical. And, as Barbara Castle (Soc., UK) said, there is an ever-widening gap between what we say and what we actually do to solve the problems.

This, however, was not the case as far as industrial cooperation was concerned. In a well-considered report by the Joint Committee and the Consultative Assembly (combining both ACP and EEC MPs), Gérard Fuchs (Soc., France), who was speaking on behalf of the working group on industrial cooperation, began by analyzing the present situation in the ACP industrial sector and throughout the various cooperation agreements, before going on to propose a number of solutions.

The *rapporteur* pointed out that the EEC, overall, was a net beneficiary of industrial trade with the ACP countries. Anyone can see that, he said, and if we are not careful the ACP countries will go on importing these industrial products for some time to come, without setting up the sort of structures that will get them to the stage of industrial development of their own. He underlined the fact that the financial means earmarked for industrial cooperation had only gone up by a small amount, from 28% to 37%, from Lomé I to Lomé II—and this included investments in mining too. In terms of per capita aid, Mr Fuchs went on, "it is once again the Community which benefits in a ratio of 3 to 1".

Mr Fuchs then said that industrial cooperation had to fit into cooperation as a whole if the nations involved were to fulfil themselves. The problem of agricultural development was still the top priority and industrialization remained a second-rank (not a secondary!) priority. Industrialization had to become an extension of agricultural progress so as itself to become a factor of progress for the economy as a whole.

Gérard Fuchs made a number of proposals aimed at achieving this genuine industrial development in the ACP group. First, eliminate the contradiction between free trade and the safeguard clause system by providing for a long period of importation of ACP products. Second, make the rules of origin more flexible and clearer for the LDCs and the island countries. Third, include ACP first-stage processing products in the Stabex lists. It may seem difficult, but it is possible to find a means of improving the situation. Fourth, create monetary compensation zones (like the CFAF zone or the ECU zone in Europe) to facilitate regional cooperation. Fifth, open a line of credit with the EIB for small and medium-sized European businesses wishing to invest in the ACP countries. Sixth, guarantee private in-

vestments. Seventh, get the Community to vouch for recurrent expenditure, to facilitate the starting up and consolidation of new industries in the ACP countries. Eighth, set up a kind of economic and social committee to get workforces involved in industrial cooperation and to ensure respect for certain ILO conventions. Ninth, and most importantly, set up an ACP-EEC development bank.

Photo LEHNARTZ - Berlin

The mayor of Berlin, M. Weizsäcker, speaking before the start of the working sessions which were dominated by the place of Man in development and the impact of Lomé on the economic progress of the ACP states

The ACP-EEC bank — a bone of contention?

This last proposal, "an important idea and a sign of the times", Mr Fuchs said, is, with the EDF, the key element of future ACP-EEC cooperation in general. The ACP countries are getting a lot of support here from MEPs. The ACP group believes that a fund, the EDF in this case, must be limited in both means and scope because of the fixed (i.e. non-evolving) and programmable nature of its resources and that the implementation and achievement of ambitious aims in agriculture, industry, infrastructure, etc., demands extra financing that the countries themselves would be unable to provide unless they have access to the international financial markets. A bank is therefore the best way of gaining this access to the capital available in the world and of being able to mobilize some of it to finance development. The proposal, however, is a controversial one. But the ACP countries are pointing to the example of the Community itself, saying that the EIB has resources and an ability to mobilize resources that are far superior to the possibilities of the EAGGF (the European Agricultural Guidance and Guarantee Fund) or of many other European regional funds. If there is no incompatibility and there are not too many organizations between the EIB and the other inter-Community funds, there is no reason to suppose that an ACP-EEC bank will be superfluous as a means of mobilizing financial capital for the development of the ACP countries. This was how some of the delegates in Berlin saw it.

Although the debate on the ACP-EEC bank proposal never really got going, the EIB is known not to be in favour of the idea, in spite of the fact that the ACP countries and the Fuchs report want to see it involved in the constitution and management of any such ACP-EEC institution of cooperation. The Commission's position could well develop either way. Nevertheless, more even than the human rights issue, the question of the ACP-EEC development bank could be a real bone of contention during the negotiations (see the Fuchs interview on page XIV).

Culture is the cornerstone

The other report which provoked arguments as interesting as they were impassioned was the Chasle report on respect for ACP culture. The Mauritian Ambassador, who has been championing various forms of ACP culture for many years now, produced a report on cultural cooperation which provided an opportunity for the participants, and the Europeans in particular, to agree, at last, that economic cooperation was also—and perhaps first and foremost—a question of knowledge, respect and integration of the ways of life of the people in what are often imposed developments models. "Our peoples seem uprooted in their own societies", as one ACP delegate put it.

Mr Chasle summed up the reasons that must lead us to cultural cooperation in the next convention. "After the enforced domination of the most diverse forms of ACP culture, we have today an opportunity to transform what was chronic humiliation into a real recognition of our respective cultures that will lead to greater understanding". This enhancement of our cultures, he went on, will enable the West, which knows nothing about our ACP societies in spite of having spent many years in them, to gain a greater understanding of them and perhaps to see why its economic assistance to them did not succeed". Economic cooperation looked for far too long like a legal formula for extending the cultural model of the West. But recognition of the cultural difference, many ACP speakers said, should not be taken to mean a way of recognizing apartheid or any of the other forms of discrimination that crop up here and there in Europe because some people have analyzed the economic crisis wrongly. Culture and economic cooperation should henceforth go together in the ACP development campaign because "culture embraces all the dimensions of the life of every individual and, of course, every nation", Raymond Chasle added.

In the next convention, the aim, as far as cultural cooperation is concerned, should be to release funds to make ACP culture known in Europe, by building cultural centres, putting an introduction to the ACP countries into the primary school syllabus and running information campaigns in the mass media—general cultural cooperation.

Ambassador Chasle also presented a report on ACP students and workers in Europe. This also covered clandestine immigration and, here, Chasle spoke out against the all-too-frequent failure to distinguish between ACP nationals who are perfectly legally established in Europe and illegal immigrants, of whom the ACP was not the biggest contingent. He asked the Community not to "marginalize this issue and to make commitments during the negotiations with a view to a lasting solution to the problems of ACP nationals living in Europe. The latter, he maintained, are as entitled to respect as are Europeans living in the ACP countries.

Cultural cooperation is respect for the fundamental differences between the ACP countries and Europe. It means "renouncing all forms of ideological colonialism".

Mr Israël (Eur. Dem., France), however, was anxious to point out that cultural cooperation means recognizing that all these cultures are equal. He reproached Raymond Chasle for putting too much emphasis on the domination which ACP cultures have suffered and said that the ACP countries should realize that their governments were also to blame for the cultural alienation mentioned in the report on cultural cooperation. As a result, Mr Israël said, the inclusion of cultural

cooperation in the next convention will involve a new definition of culture.

This debate on respect for ACP culture was to resurface in the discussion of the report of the ACP-EEC parliamentary enquiry in southern Africa, in the countries that have been victimized by South African aggression, and of the report of the visit four Euro-MPs made to the Angolan rebels in the south.

Strong criticism of South Africa and apartheid

The MPs condemned the "most monstrous system in the world today" and the serious difficulties arising from repeated South African attacks on Angola, Mozambique and Lesotho. MPs declared that South African aggression was primarily aimed at destabilizing the neighbouring countries, which were fighting racialism and the illegal occupation of Namibia by Pretoria. But it was the Ugandan delegate who expressed the ACP feelings on apartheid and South African action in the southern part of the continent with the greatest force. He said that "if South Africa is still resisting, it is because Europe and the West are unable to enforce what is right". "Those who shout loudest when the USSR shoots down a South Korean Boeing are the very ones who claim that the system of apartheid does not interfere with human rights", he said. It was a Welsh MP who perhaps expressed European feelings best when she said that "it is not the majority of Euro-MPs, nor the people of Europe who support apartheid but a minority possessing considerable financial means allowing them to develop South African propaganda in Europe". She pointed out that systematic setbacks in the anti-apartheid campaign are organized all over the world by South African lobbies and we have to find ways and means of effectively counteracting this South African propaganda in Europe.

The meeting felt that the illegal entry of four Euro-MPs into Angola—their spokesman in Berlin declined to say where they had crossed the border or where they had got financial backing for such a costly and dangerous undertaking—was an attempt to counter the ACP-EEC fact finding mission. The four MEPs insisted on the private nature of their journey, but, the Consultative Assembly said, why did they then go in for so much publicity and do so at the very moment of the fact-finding mission? Oumar Sy, the Senegalese ambassador in Brussels, who was a member of the mission, gave one or two details which confirm the pro-South African nature of the trip made by the four Euro-MPs. Mr Sy said that even if the illegal entry of the four MEPs was to be considered as being of private nature, as one of them stated in Berlin, it nevertheless had an obvious political significance and should be seen as such. The Senegalese ambassador then compared the four MEPs initiative to an approach which had been made to him by another MEP, a member of the fact-finding mission, to meet in his company some South African officials in Pretoria. Mr Sy, of course, refused. He went on to roundly condemn the MEPs' initiative, suggesting that it smacked of cultural disdain by Europeans for the ACPs. Mr Sy asked one of the MEPs how Europeans would react if ACP MPs entered one of the countries of Europe illegally to meet representatives of terrorist movements. Moreover, the leader of the Angolan rebels got financial and military support from South Africa, which meant, as one ACP MP put it, that he would never get the support of the African states, even those "which had a certain amount of sympathy for his political views". So those who reproach Angola for its ideas or its political alliances (the Cuban presence) are no more convincing when they lend their support to the rebel movement financed by the apartheid régime, said another ACP MP. Michel Poniatowski, Chairman of the European Parliament's Committee on Development, stated once more that the European Parliament would certainly not be inviting the Angolan rebel leader as had been rumoured.

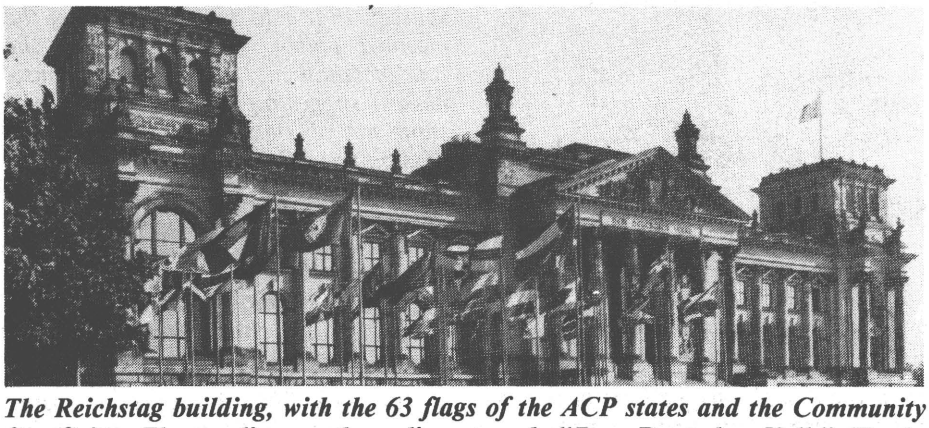


Photo LEHNARTZ - Berlin

The Reichstag building, with the 63 flags of the ACP states and the Community flag flying. The wording on the pediment reads "Dem Deutschen Volk" (To the German People)

The Consultative Assembly, which had a particularly heavy workload because of the run-up to the ACP-EEC negotiations, examined various other reports, including one on world population and world hunger (the Ferrero report). On this last point, the Community has failed to meet the ACP claim for preferential prices for produce from the Ten's agricultural surpluses. The Community, through Edgard Pisani, said that it thought, above all, that ACP agriculture had to be developed, this being the key to economic progress, as Zambian ambassador S.J. Kazunga put it. Mr Frisch said that the trend should be to include food aid in the global cooperation policy, with a view to making it an element of development.

Next meeting in Brazzaville (Congo)

The Berlin meeting wound up with votes on a large number of resolutions for renewed cooperation that took account of the real economic problems of the ACP countries. The accent should be on specific targets, stressed both ACP and EEC delegates. But there was still one major difficulty and that was the financial means of implementing a new development strategy based on man in his ecological and cultural environment.

The ACP-EEC MPs will be meeting again in Brazzaville (Congo) in February. Note, too, that the Consultative Assembly has also decided to rethink its system of organization and the idea of a single assembly and the discontinuation of the Joint Committee might be used in the next convention.

A new set of officers was nevertheless elected for the Joint Committee. They are Mr Bersani (Chairman, no change), Mr Pearce and Mrs Focke, on the European side and Congo (Chairmanship), Papua New Guinea and Trinidad and Tobago on the ACP side. o L.P.

Gérard Fuchs (Soc. France), rapporteur for the working group on industrial cooperation, advocates:

Increasing the means of intervention and setting up an ACP-EEC development bank

► *Mr Fuchs, your report to the Consultative Assembly contained a certain number of new ideas on industrial cooperation. Can you sum them up?*

— First of all there are one or two very general ideas and then there are a number of more specific proposals. The first general idea is that industry has to be seen in the context of development as a whole, that there is more to industrializing a country than building factories, there is the question of training and there are social and cultural problems too. Industrialization therefore has to be integrated into the whole development process, where the priorities, of course, must be agricultural in order to avert famine. But industry can, obviously, make a great contribution to the anti-hunger campaign in terms of tools or of preservation of produce.

A second idea, and one that is very important for Europe, is that industrial cooperation is not for the benefit of the ACP countries alone. It is also in the Community's interests, because the Community exports a large number of products to the Third World and to the ACP states and benefits from this in terms of employment: industrialization, contrary to what is sometimes naïvely believed, boosts trade and acts as a spur to world activity, which, in a period of crisis, is beneficial to all concerned.

The third idea is that, although the Lomé Conventions have been positive so far, the results have not been wholly satisfactory. First of all, because the money has gone to the rich, to those countries which are the most likely to create industry—this, I should say, is traditional—and second, because the approach has perhaps been too project-oriented. We have built factories without paying enough attention to how useful they are, how well they fit into the general industrial network and how they will operate later on.

Photo Lehnartz

Gérard Fuchs

We all know of factories in Africa that only work to half capacity because there is no strong currency to pay for skilled staff and spare parts or some such reason.

The fourth idea is that the main thing about industrial cooperation has to be the industrialization strategy that the ACP partners choose. With both industrial strategies and food strategies, the Community has to support whatever choices the local governments themselves have made, since conditions vary enormously from one country to another. Then, even if there are things of obvious common interest to all ACP countries, capitalizing on raw materials is most certainly a fundamental choice.

However, the size of each of the countries is important and the other prime concern must be regional cooperation to create small and medium-sized businesses in the rural world. That is an important difference. The Lagos Plan is very positive here, because it poses the problem of self-reliant development. Unlike our conservative friends from Britain, we do not think that trade by itself will enable the ACP countries to catch up with the industrialized world. Quite the contrary, I should say. We well know that trade heightens inequality, not the opposite. So much for the general ideas.

The report also contains a large number of more specific proposals on the need for genuine free trade and for codification of the way safeguard clauses are used, on the need to redefine and relax what we call the rules of origin—which guarantee where products come from—particularly for the least developed countries and on the need to extend Stabex to processed products so as to avoid perpetuating the export of basic raw materials and encourage a certain degree of industrialization. And we are stressing the need to increase the financial resources provided under the next Lomé Convention.

► *In talking about financial resources, that is to say the means of the planned policy, you emphasized the role of small and medium-sized businesses, suggesting they should receive some sort of contribution or have some possibility of financing from the European Investment Bank. What would be the difference between this and the plan for the ACP-EEC development bank which now looks as though it will be one of the essential means of financing under the next convention?*

— It's not quite the same. The issue of the ACP-EEC development bank, to my mind, reflects the increasing ACP desire to be involved in the management decisions of the European Development Fund and the European Investment Bank where such decisions, even the apparently highly technical ones, concern them. As for the long-standing debate between the ACP countries and the European Investment Bank, with the ACP countries saying they could do more with more money and the Bank saying there's no point in having the money because there aren't enough proper projects, I believe that it is only by getting all the partners together round a table and getting them all involved in whatever decision is being taken that any progress will be made. I believe that this, above all, is the import of my proposal for an ACP-EEC development bank—which, for obvious reasons of borrowing capacity, would probably have to keep its ties with the EIB in the early stages but which would still mean the ACP partners were properly involved.

The second point you raised is, in a

J.L. Debaize

The Presidents of the ACP and EEC Councils of Ministers (at the head of the table), flanked respectively by T. Okelo-Odongo, ACP Secretary-General (left) and opposite (left to right) R. Chasle, Ambassador of Mauritius, Dieter Frisch and Edgard Pisani. "It is only by getting all sides to sit down around the same table and by making them reach a decision together that this debate can progress".

way, the problem of the strategy that such a bank would have. Going beyond the major projects, which are both obvious and essential, one of the conclusions of our report is, it is true, that aid for small and medium-sized businesses is a very important thing. Today, this aid goes through European loans to national development banks, which then distribute it. I think this is very useful. And these loans are on the increase, almost 15% of what the Community spends on industrial aid at the moment, and that is very positive. This, however, does not, to my mind, meet another need—that of getting small and medium-sized businesses in Europe to invest in the ACP countries. Here, I believe, it would be helpful if, say, the CID could guide European firms wishing to cooperate with ACP firms or set up branches in the ACP group towards the EIB and if a line of credit could be opened for them so they had greater incentive than they do now to invest abroad.

► *All the instruments of cooperation, except the Agricultural Centre, are in Brussels. Would it not have been a lot more effective if, say, the CID had been sited in one of the ACP countries?*

— That is a real problem and one that is rooted in the past. Ultimately, the Lomé Conventions are, in a way, heirs of a certain type of financial relations that existed between the European capitals of the post-war era and what were still their colonies. And when I said that the ACP countries were anxious for more co-management and equality just now and that I felt that the trend was both ineluctable and desirable, I also had this in mind. So I think it would be a very positive thing if some of the institutions of ACP-EEC cooperation were somewhere other than Brussels. I should perhaps not take the example of the CID because, if you agree that the CID's job is to encourage European firms to invest in the ACP group, then it is, on the face of it, better for it to be in Europe. But I think there would be every advantage in decentralizing some of the cooperation bodies—including the famous bank we might be getting, which could well have its headquarters in what is, in fact, one of the countries of the South. o

Interview by L.P.

Chief Peter Afolabi (Nigeria)

Lomé shows "signs of cracks and asymmetry"

Chief Peter Afolabi, ambassador of Nigeria in Brussels, chairman of the Industrial Cooperation working group of the ACP-EEC Consultative Assembly describes the "cracks" and "asymmetry" which have appeared in the present Lomé Convention. He makes some suggestions to ensure future investments in the ACP states.

► *Nigerian participation in the Lomé I and II negotiations was considered a factor of progress compared to Yaoundé. Can one say that some of the unsatisfactory results of these conventions can be laid at the door of Nigeria?*

— I would say no to the second leg of your question. But I would start with the first leg where it was said that the improvement over Yaoundé was largely due to Nigeria's participation; it was due not only to Nigeria, but also, I would say, to Britain's entry into the Community and the effect of that event on the Commonwealth.

Nigeria happens to be one of the big countries among developing countries of the Commonwealth, with a certain amount of weight. When you consider its population and resources, Nigeria is certainly like India in Asia. With Nigeria there, it gave the group a degree of strength in bargaining; it reinforced the bargaining power of the group which now calls itself the ACP and which signed Lomé I.

Lomé I was indeed an innovation, a departure. It removed certain neo-colonialist lacunae inherent in the Yaoundé Conventions. For example, the introduction of a chapter on industrial development, the removal of the insistence on reciprocity, measures of co-management—all these were attained in Lomé—not only because of Nigeria, but also because of other newly independent countries that subscribed to the Georgetown Agreement.

But I will say one thing: Nigeria was large-hearted. It is still large-hearted having regard to what it could have obtained by signing a separate agreement with the Community. But it sank its interest in the interest of the larger group, the group of developing countries, as an example of what they can do by coming together. It was prepared to make available its own resources. We even said at the beginning we didn't want anything from the EDF. What we got was $7.05 million in comparison with the size of Nigeria's needs. To me, that was a manifestation of a will to assist others in their bargaining powers.

Now, for the failure, I would not say that Lomé is a failure. Any system of this nature will after some time start showing signs of cracks, signs of asym-

metry. Look at the European Community itself and you will see what I mean. But you can't compare the group of countries which have participated in this convention with the European Community; it is a union of separate independent countries coming together to negotiate an agreement with a group of industrialised countries. Therefore this group of countries is not the same, juridically, economically, as the Community. There is a fundamental difference there. This group itself is increasing in number, but the fund is not increasing in arithmetic proportions. Promises were made in Lomé that have not been fulfilled. Take Stabex: it is not even covering our legitimate requests. The requests of the least developed are not fulfilled. So the history of Lomé is one of promises without fulfilment. But I would not say it has been a total failure. The impact varies from country to country, but remains weak.

Having regard to the role of Nigeria and whether the failures or limited successes are due to my country, I would say it is by and large due to lack of political goodwill on the part of our European partners. Nigeria is prepared to help others. Apart from our participation in the Lomé Convention, we have other schemes, agreements or programmes of cooperation with our neighbours, and with all the ACP countries. I can cite, for example, the fund we have in the Caribbean. And yet, we still remain within the Convention.

Nigeria remains, I repeat, as a political act and also partly to ensure that the bargaining power of the group of developing countries is not reduced nor eroded. What we have been able to do so far depends also on the wishes of other member states. Like the insect, it dances, but can it dance unless others encourage it? If others need Nigeria's support, we will give it. But it is not a focus of Nigeria's policy to impose its will on others, nor will Nigeria ever, under any circumstances, desert its friends and its brothers. But to say that the limited success that has been attained is due to us only is not quite true. I think it is by and large due to all organs of the Community and the solidarity of all ACP states.

Of course, the negative impact and marks of sluggishness and slowness of the implementation of the Convention remain yet unsolved. There also remains the neo-colonial attitude: take the question of award of contracts; how many contracts have been

J.L. Debaize

Chief Peter Afolabi

awarded in which ACP nationals were involved! By and large we have not fought hard on this issue. The budget of the Community is also becoming less and less able to fund the inevitable expanded and extended approach of Lomé.

The fact of Nigeria's presence continues to reinforce the position of the ACPs. Nigeria's role, however, depends on the other ACPs since Nigeria will not impose itself. But because we believe in the policy and the efficacy of South-South cooperation, we remain and will continue to be there so long as we remain convinced that our bargaining position can achieve more and more success for all the ACP.

► *What are the main suggestions Nigeria will be putting forward during the negotiations, especially on the sector of industrial cooperation?*

— We are interested in all the sectors, I must say. You can't talk of industrial sector without talking about the overall objective of the Convention, which is development. The industrial sector is just one section of the policy. Don't forget agriculture, the production in the sector determines the success of industrialization process. Industrialisation is more or less the motor of the engine of growth, whether one uses the capitalist model or the model imposed by the Community on us.

You can't talk about these two without trade, finance, under the global issue. In finance in the strict sense: what would be available in terms of official development assistance, of facilities for access to private capital. Nigeria is interested in all aspects to ensure that the momentum of development is sustained.

The record of ACP states is a catalogue of deficits while Europe is having more and more surpluses. Our export earnings logically continue to be eroded. There is also not enough finance to pay for our development. Why is this? The debt burden is part of the reason. The developing countries are continually servicing debts, yet the debts are still growing.

So we are equally interested in trade, industrial cooperation, agricultural cooperation. We have many mouths to feed. We should be able to reduce our dependence on food imports. We should be able to achieve a large measure of self-reliance by the end of this decade—these are some of the priorities of Nigeria which I do believe all ACP states share.

Coming back to industrial cooperation, a field which has always been a concern and interest to Nigeria and which we don't want to abandon, our proposals will be in the area of restructuring of the institutions to facilitate and to enrich this area of cooperation with the Community. Our proposals will also be to ensure more investments, for investments appear in this area to stagnate. In the past where there was a flow of investment, the least developed and island countries were left out. We will try to make proposals to ensure that, through regional cooperation, we will create viable markets at least initially to provide markets for industrial and other products.

As regards constraints on industrialisation of ACP states, there is a school that proclaims that it is not a question of resources, but finance does play a great role; problems and possibility of tapping complementary financing have to be solved if industrial cooperation is meant to be meaningful; it could be the opening up of facilities by way of access to private capital markets or perhaps we can think of a kind of institution which is similar to the one I mentioned at the Consultative Assembly, and which the Commission is allegedly proposing for Latin America. I know there may be excuses and resistance from the officials of the Commission, or the European Investment Bank, but they should look at the long-term effect on both the big and small member states of the ACP—and in all conscience appraise

objectively the limitations on the possibilities of European Investment Bank intervention in the ACP states.

► *Is your proposal for an ACP-EEC bank in a different form?*

— It is not the same thing. What I am talking about is a kind of facility, or call it an institution on a modest basis, a joint bank between the ACP and EEC, similar to proposals which were talked about in the London Financial Times not long ago, which would assist many ACP countries with balance of payments deficits; it may cover the guarantee of credit and the re-scheduling of debts. Debt burden has become a major constraint to economic development of ACP states. This, therefore, goes beyond the original intention underlying the proposals for an ACP-EEC fund. If the ACP and the EEC can together work out modalities to create this institution or solve the problem, it would be a major thrust in the North-South relations. And as for Lomé, and I hope its successor would be proclaimed a model of cooperation which should arouse the admiration of the whole world, I hope both ACP and EEC can find a way to look at it very objectively. But I know the importance of finance in today's game, and that finance is not the only basic issue, there are many other important areas of needs which I am sure the Convention will cover.

► *Do you have an idea of the amount of the capital needed for that kind of institution?*

— I am not a banker. One makes the proposals and if accepted in principle then experts will study and devise a model within the possibility of the arrangements we'll have in the future. I am not a banker but I think it is possible because I hear from reliable sources that France and many francophones states in Africa have something similar in practice and I remember, back in 1979 when we were arguing about some forms of financial institution for industrial cooperation, the Foreign Minister of France saying that, yes, they do have something similar, why can we not examine such existing possibilities between developed countries and the Third World if they do really exist. But for one or two countries that blocked the door to a common agreement on that, we would, perhaps, have gone far by now.

I am not saying that having a bank will solve all the problems, but it will remove one of the constraints on development. Development is not only confined to the availability of the basic needs, that is food, water and shelter; of course, we must satisfy those needs, but they also go beyond simple satisfaction of those needs. If we are to catch up, not even catch up, but take off in economic development terms, we should not remain satisfied merely as suppliers of raw materials to Europe in perpetuity.

► *Do you consider the success of an overall development policy depends on the amount of means you put into it, or do you think also that education and skills come before?*

— Well they are all together in development economics. Private loans or access to private capital are becoming less and less possible or available to the ACP. Official development assistance is also rapidly declining. In order to revive the economies fast, to help the recession disappear, international trade must be revived and this is based on credit and finance. For this type of cooperation many ACP states don't have the capacity that Nigeria has. They would need a lot of financial assistance and much more besides. So finance, management skill, training, technology are important. But, first and foremost, the finance must be there to supplement the declining foreign reserves many have or don't have at all. So I believe finance in all its ramifications—not merely limited to the traditional envelope—is important and is also of primordial importance in our future relations. o

Interview by L.P.

EUROPEAN DEVELOPMENT FUND

Following a favourable opinion delivered by the EDF Committee (182th meeting of 19 and 20 September 1983), the Commission has approved financing in respect of the following projects:

Mali

Village water engineering
Fifth EDF
Grant: ECU 4 300 000

The project forms parts of efforts undertaken by Mali to solve the water supply problem, especially in rural areas, and is aimed at constructing 80 large-diameter wells in four sectors of the Fifth Region (region of Mopti): Bankass, Koro, Bandiagara and Douenza.

The project will require:
— the supply of equipment for the DNOP;
— the supply of equipment;
— the construction of 80 wells;
— the provision of technical assistance.

Niger

Village water engineering
Fifth EDF
Grant: ECU 4 900 000

The aim of this project is to satisfy the drinking water needs of the rural population in parts of the department of Zinder in Niger through the construction of some 280 boreholes equipped with hand-operated pumps and the involvement of the villagers in the project with a view to their taking charge, both financially and materially, of the maintenance of the boreholes.

The project involves the drilling of boreholes and the installation of pumps plus the technical assistance needed to monitor the work, arouse the population's interest in the project and train villagers to take charge of equipment.

Member countries of the CEAO and the CILSS

Regional Solar Energy Centre (CRES)
Fifth EDF
Grant: ECU 2 270 000

The purpose of the project is to establish the Regional Solar Energy Centre (CRES — Centre Régional d'Energie Solaire) and thus enable the member states of the CEAO and the CILSS (Cape Verde, Chad, Gambia, Ivory Coast, Mali, Mauritania, Niger, Senegal, Upper Volta) to exploit the particularly high potential throughout the region in the field of renewable sources of energy. The CRES will promote this development at regional level through its activities in the fields of information, training, applied research, promotion of industry, aid for the financing of projects and engineering consultancy.

Togo

Village water engineering

3rd, 4th and 5th EDF
Grant: ECU 2 927 000

The purpose of this project is to continue meeting the drinking water requirements of rural inhabitants in the Central, Kara and Maritime regions by constructing about 275 water-supply points (boreholes equipped with hand pumps) and by involving the recipient communities in their construction with a view to making them financially and physically responsible for maintenance.

The project involves principally: the construction of 275 boreholes; technical assistance in connection with the supervision and monitoring of the works, an extensive campaign to motivate villagers, the training of the people involved (villagers and artisans) to enable them to assume responsibility for the equipment, and the strengthening of the Togolese administration so that it can supervise the entire operation.

Liberia

Butaw Oil Palm Plantation (continuation)
Fifth EDF
Grant: ECU 1 600 000

The present project is intended to consolidate and continue, for a two-year period, the "Butaw oil palm project".

The objective was to establish an oil-palm estate of 3 035 ha and 320 ha of small-holder plantings (to increase to 2 020 ha over time), at Buto (Butaw) about 50 km north of Greenville in Sinoe County.

Three quarters of the plantings have been established and the housing programme and road construction have to be completed.

Central African Republic

Rural development in the cotton-growing area
Fifth EDF
Grant: ECU 7 000 000

Agricultural development projects in Ouham, financed under the fourth EDF, have had a positive effect. The aim of this project is not only to help consolidate these results under the fifth EDF, but also to initiate a more diversified rural development process. In addition to cotton growing, the project aims at increasing food crop production (mainly groundnuts, maize, sorghum, sesame seed and rice cultivated in rotation with cotton). Some 61 000 holdings will be affected by the overall project, and Community financing will be channelled largely into the "rural tracks" and "use of draught animals in arable farming" parts of it.

To this end, the project is designed in particular:
— to support SOCODA (Société Centrafricaine de Développement Agricole)
— to step up cotton growing and food crop production, largely through applied research, training, agricultural extension schemes and promotion of animal traction;
— to improve rural infrastructure (tracks, village water engineering);
— to upgrade installations used for the upkeep of ginning and transport facilities.

Congo, Gabon, Central African Republic

Realignment of the CONGO-OCEAN railway
Fifth EDF
Grant: ECU 300 000
Special loan: ECU 10 000 000

This project concerns further financing for realignment of the Congo-Ocean railway (CFCO), the cost of which has been reassessed as a result of continuing geotechnical difficulties.

The aim of the main project is to build a new line between Bilinga and Loubomo, over a distance of 91 km, to replace the existing track, which is the only form of transport linking the interior of the People's Republic of the Congo and its immediate neighbours, the Gabonese Republic and the Central African Republic, with the Atlantic. Southern Gabon is also served by a branch of the CFCO to the east of the section being realigned. The existing track, with its many tight bends, slows down traffic and is the cause of frequent accidents.

The project is being co-financed by the Community, Congo itself, the Congolese banks, France, Canada, the World Bank, the ADB, ABEDIA, the Saudi Fund, the Kuwait Fund, the Iraq Fund, the Abu Dhabi Fund and the OPEC Fund.

Zaire

Consolidation of agro-industrial projects
Fifth EDF
Grant: ECU 8 760 000
Special loan: ECU 2 855 000

By consolidating the resources at the disposal of the cocoa (Bulu), oil palm (Gosuma) and tea (Butuhé) agro-industrial complexes, the project aims at enabling the three concerns not only to balance their accounts but also to produce the surplusses they are capable of generating. With the instruments of production (plantations and factories) already in place as a result of previous operations, the investment programme now has to be completed in a way which will best guarantee the viability of the three complexes and, at the same time, ensure the success of the measures to privatize their management by providing appropriate backing for the new managers.

Some of the resources to be made available will be channelled into the production apparatus itself with the enlargement of certain plantations, the building of plantations warehouses, the completion of hydro-electric development work at Butuhé and the supply of inputs (fertilizer, agricultural equipment, spare parts, etc.) while others will be directed at improving managerial skills at the three complexes.

Uganda

Rehabilitation of Kampala city roads
Fifth EDF
Grant: ECU 10 600 000

The project aims at diverting the heavy international commercial traffic by by-passing the roads of the City Centre and at rehabilitating about 30 km of the most important city roads of Kampala. The works mainly consist of an improvement of the drainage system and of laying bituminous surfacing on the roads under rehabilitation.

Uganda

Rehabilitation of Kampala water supply
Fifth EDF
Grant: ECU 5 270 000

The project provides for the full rehabilitation of the potable water supply to 90 % of Kampala's population. It comprises Phase II of the EC-financed Phase I. Under Phase I, the most critical parts of the city's water system were restored.

On project completion, apart from the restoration of safe water to most of Kampala's population, T.A. to the

NWSC will improve the latter's managerial, accountancy and revenue collection capacities.

Sudan

Juba airport
Fifth EDF
Grant: ECU 5 500 000

The prupose of this proposal is to seek additional funds for the Juba airport project in order to complete the project.

The additional funds requested as a grant from the 5th EDF amount to 5 500 000 ECU. This amount also provides for a small airport maintenance unit.

Tanzania, Burundi, Rwanda Zaire, Uganda, Zambia

Dar-es-Salaam harbour and Lake Victoria ports improvements
Fifth EDF
Grant: ECU 4 000 000

The main purpose of the project is to safeguard and to improve the cargo handling in the port of Dar-es-Salaam and ports on Lake Victoria and to improve the operations of the railway ferries on Lake Victoria.

To this end, the project is to provide:
— equipment for cargo handling in the harbour of Dar-es-Salaam;
— equipment for cargo handling in the ports of Mwanza, Musoma and Kemedo bay on Lake Victoria;
— navigational lights and light buoys on Lake Victoria.

Burundi

Supply of electricity to the Rwegura-Kayanza-Ngozi region
Fifth EDF
Grant: ECU 500 000
Special loan: ECU 1 650 000

The aim of the project is to extend the electricity network to the Rwegura-Kayanza-Ngozi region, some 50 km to the north-east of Bujumbura, which is currently supplied to a degree by oil-fired electricity generators.

Essentially, the project comprises a medium-voltage power line connecting the Rwegura hydro-electric power station (currently at the construction stage) to Kayanza and Ngozi and supplying five centres of population with electricity.

Ethiopia

Alemaya Agricultural College
Fifth EDF
Grant: ECU 211 908

The Alemaya Agricultural College was set up in 1954 with the aim of training Ethiopian personnel to take part in the agricultural and rural development of the country.

The aim of the project is to supply laboratory equipment (82 items) and financing two study awards for two Ethiopian teachers.

Madagascar

Rehabilitation of the Société Malgache du Palmier
Fifth EDF
Grant: ECU 752 695

The aim of the project is the rehabilitation of SOMAPALM's agricultural and industrial installations, namely:
— productivity improvement of the 1 145 ha palm plantation;
— repairs to the oil mill (capacity 6 t/h);
— supply of equipment;
— revitalization of the management structure by the appointment of technical assistance personnel.

Sudan

Magwe-Upper Talaga road
Fifth EDF
Grant: ECU 1 170 000

The project provides for the upgrading of 67 km of feeder roads in southern Sudan.

The improvement of the existing tracks to gravel standard ensures that the Magwe-Laboni area, situated near the Ugandan border, will obtain an all-weather road link to the capital Juba. This road will also be of great importance for the EDF-financed Upper Talanga Tea Project (UTTP), Firstly as a supply route to the project and later to facilitate distribution of the tea to the markets.

Sudan

Upper Talanga Tea Factory
Fifth EDF
Grant: ECU 979 832

The project is for the supply and installation of a Tea factory within the framework of the Upper Talanga tea project.

Tanzania

Additional component to the vehicle repair project
Fifth EDF
Grant: ECU 151 853

This project is an additional component to the vehicle repair project presently under implementation. The vehicle repair project's aim is to improve tje transport sector by rehabilitating parastatal's fleet. It consists of supplying parts and materials for the repair of 600 commercial vehicles and for the assembly of 700 new commercial vehicles.

Senegal

Multiannual training programme
Fifth EDF
Grant: ECU 2 500 000

This project is for the financing of Senegal's multiannual training programme for the academic years 1983/84 and 1984/85. The programme covers technical/vocational refresher courses or seminars.

Benin

Cattle farming in the Sud-Borgou
Fifth EDF
Grant: ECU 203 315

This project comes in between the already completed 3rd EDF project on cattle farming in the Sud-Borgou region and its logical sequel, the 5th EDF consolidation and extension project, which is currently being appraised.

The project is part of a national plan to develop stock farming. In the region in question, the objectives are mainly as follows:
— continuation of direct measures concerning animal health and livestock supplements;
— continuation of extension and motivation services for stock farmers;
— extension into the fifth EDF project of an experimental phase concerning cattle watering holes.

Sierra Leone

Feeder road construction unit Kambia district
Fifth EDF
Grant: ECU 248 420

The purpose of the project is to provide road construction equipment. The equipment will be made available to an ILO feeder roads construction team operating in the Kambia District, cofinanced by Danida and Italy.

Western Samoa

Multiannual training programme
Fifth EDF
Grant: ECU 50 000

The training programme concentrates on those areas, which are given high priority for development by Western Samoa. The actions to be undertaken include short-term courses overseas and long-term fellowship awards overseas and in the region.

Solomon Islands

Small rural infrastructure
Fifth EDF
Grant: ECU 500 000

The project provides funds, through the Provincial Development Fund (PDF)—established on 1 January 1980—to finance a programme of small infrastructure projects within the general development programme of the provinces, but in line with the overall development policy of the Central Government.

The EDF contribution towards the project is *500 000* ECU as grant, for the construction, over a 2-year period, by direct labour or small contractors of rural feeder roads, small wharves and storage sheds.

Navigational aids for provincial airfields
Fifth EDF
Grant: ECU 470 000

Solomon Islands, an archipelago of six large and numerous small islands and atolls stretching over 1 400 km of ocean, has developed a fairly dense network of domestic air services.

Out of the 21 airfields regularly served by the national airline, only 7 have any kind of navigational aid system.

The purpose of the project is to provide navigational aid in the form of solar powered non-directional radio beacons (NDB) to three more airfields, replace the existing beacons which have come to the end of their lives in two locations and provide spare facilities in case of breakdown of any of this equipment.

Grenada

Grenada national library
Fifth EDF
Grant: ECU 290 000

The project comprises the expansion of the Grenada public library by the renovation, refurbishing and more effective utilization of the existing building in St George's. The rehabilitated library (now designated *National Library*) will increase its stock of reading materials, enlarge the areas for reference and study, introduce facilities for lecturing, audio-visual display and storage of archival matter. In addition, a mobile library will operate from the building and there will be an area for the deposit of national publications.

Bahamas

Fruit crop nursery
Fifth EDF
Grant: ECU 510 000

The purpose of the project is the provision of good quality tree seedling stock to small scale growers, with the aim of increasing incomes and national food self-sufficiency.

EDF funding will provide:
a) the means to establish a 3 ha. seedling nursery (including a store, minor works and the provision of equipment,
b) technical assistance personnel to assist in project implementation,
c) a decreasing contribution to input costs.

Netherlands Antilles

Provision of a crane for the island of Saba
Fifth EDF
Grant: ECU 450 000

The aim of the project is to ensure that the sole harbour on the small island of Saba can be used throughout the year, thereby removing an obstacle to the island's present and future economic activities.

This aim can be achieved by providing the island with a suitable crane capable of carrying out dredging and repair work in the harbour following the often considerable damage which is caused each year during the hurricane.

St Martin meteorological building
Fifth EDF
Grant: ECU 550 000

The purpose of the project is:
— to provide St Martin (and the neighbouring islands) with a multifunctional meteorological infrastructure which meets the special needs of a tourist region with a high density of air traffic in the Atlantic tropical cyclone zone.
— to replace accordingly the current station, which can only cope with simple observations at ground level, and to construct a fully operative weather forecasting centre for the Leeward Islands region.

Multiannual training programme
Fifth EDF
Grant: ECU 850 000

The aim of the project is to provide backing for the work of the Netherlands Antilles authorities in training and re-training the management personnel needed for the islands' social and economic development.

It is proposed to achieve this aim by means of a multiannual programme of specific awards for training in the Netherlands Antilles or abroad.

Line of credit for the Development Bank
Fifth EDF
Special Loan: ECU 750 000

One of the main obstacles to the development of agriculture (in the broadest sense of the word), is the absence of an appropriate system of credit for this sector.

The opening to the Netherlands Antilles Development Bank of a line of credit of 750 000 ECU to be used solely for the purpose of granting loans to smallholdings in the crop-farming, stock-farming and fisheries sectors will serve to fill this gap. o

ACP chairmanships

1. ACP council of ministers

Bureau 1.8.1983 to 31.1.1984:
President: Botswana (M. Mogwe)
Members: Cape Verde, Somalia, Burundi, Grenada, Papua New Guinea.

2. Committee of ACP ambassadors

Bureau from 1.9.1983 to 28.2.1984:
Chairman: Fiji (Josua Cavalevu)
Members: Guinea Bissau (Mario Cabral), Lesotho (L.B. Monyake), Sao Tomé and Principe (Fradique De Menezes), Mauritius (Raymond Chasle), Suriname (Donald McLeod)

3. The only change so far in ACP chairmanships

The ambassador of Sao Tome and Principe is the new chairman of the ACP-EEC subcommittee on Stabex. o

St CHRISTOPHER - NEVIS

The 64th ACP state

Last September, the British islands of Saint Kitts and Nevis became independent. These two islands, situated in the Caribbean between Porto-Rico and Guadeloupe, were discovered by Christopher Columbus in 1493 and became the first British outpost in the West Indies.

The main resources of this little country—it is only 269 km^2 and has a population of 46 000, 12 000 on Nevis and the rest on Saint Kitts—come from sugar cane (70% of exports), cotton and fishing (lobster is in plentiful supply) and, to an increasing extent, the tourist trade.

Saint Kitts and Nevis is a British-style parliamentary democracy led by a Prime Minister, currently the conservative Kennedy A. Simmons, who heads a coalition of the Nevis Reformation Party and his own People's Action Movement. The two parties combined hold six of the 10 seats in the House and the opposition is led by ex-PM Lee Moore, the leader of the labour party.

The islands, a member of Caricom and an ex-member of the OCT group, could well joined the ACP group and will accede to the Convention by accelerated procedure. o

VISITS

President Samora Machel, in Brussels

Mr Samora Machel, President of the People's Republic of Mozambique, accompanied by a large, high-level delegation, met the President of the Commission, Mr Gaston E. Thorn, during the morning. Mr Machel's delegation included: Mr Joaquim A. Chissano, Minister of Foreign Affairs; Mr Armando Emilio Guebuza, Minister of the Interior; Mr Jacinto Soares Veleso, Minister in the Office of the President of the Republic for Economic Affairs; H.E. Mr Rui Baltazar S. Alves, Minister of Finance.

A working meeting was then held, under the chairmanship of Mr Gaston Thorn, attended by the Mozambique delegation, and by Mr Natali (Vice-President), Mr Davignon (Vice-President) and Mr Pisani (Member of the Commission), assisted by their chief advisers.

President Machel and three of his ministers also met Mr Pisani, the Member of the Commission with responsibility for development, for talks before lunching with Mr Thorn at Commission headquarters.

The day's discussions concerned on the problems of cooperation between Mozambique and the European Community.

Accordingly, a number of questions were raised relating to the humanitarian food aid programme for the people of Mozambique, and the interim development cooperation programme, which includes a number of agricultural and fisheries projects.

Clearly, though, detailed talks are being held on the political aspects relating to the prospects for the negotiations, which opened on 6 October, on renewal of the Lomé Convention. Mozambique and Angola, which are not party to this Convention, are to play a full positive part in the negotiations.

Useful discussions were also held on Mozambique's role within SADCC and its constant efforts on behalf of the region's landlocked countries, with the aim of improving regional integration among the nine SADCC countries in the face of the problems of apartheid in South Africa and the fate of Namibia.

The talks, which took place in a friendly atmosphere, underline the importance which the Community attaches to cooperation with Mozambique and the great satisfaction with which it views the participation of Mozambique and the People's Republic of Angola in the forthcoming negotiations for the renewal of the Lomé Convention, alongside their fellow independent countries. o

President Samora Machel with Gaston Thorn and Edgard Pisani

SADCC

Mr Peter Mmusi at the Commission

Mr Peter Mmusi, Vice President of Botswana and Chairman of the SADCC ministerial Council and Mr Arthur Blumeris, Executive Secretary of SADCC, visited the Commission on 10 October where they discussed with Commissioner Pisani the state of EEC-SADCC cooperation. Cooperation began with the first Lomé Convention, of which six SADCC member states were signatories. In April 1980, Zimbabwe became the seventh SADCC state to be a member of the ACP group. The financing programmed for these seven states amounted to approximately ECU 380 m for the term of the Convention, to which ECU 70 m should be added for regional cooperation.

Funds are used to a great extent to finance rural development, social infrastructure and training projects.

Angola and Mozambique received ECU 18 m for rural development and fishing projects in the framework of the 1981-1982 aid programmes to non-associated developing countries.

The SADCC countries also received a significant food aid allocation, valued at 15-20 m ECU p.a. o

Mr Pisani welcoming in his office Mr Mmusi

ACP EMBASSIES

The new ambassadors from Belize, Botswana, Cameroon and Congo have presented their credentials to the presidents of the Council and the Commission of the European Communities.

Botswana

Moteane John Melamu, Botswana's new Ambassador to Brussels is a family man—he has three children—a teacher, the holder of a master's degree in English and a Doctor of Philsophy. The 48-year old ambassador spent many years teaching at college and university level until in 1978. When he was appointed High Commissioner to Zambia and two years later ambassador to the United States.

The new ambassador of Botswana presenting his credentials to the President of the Commission

Belize

Belize's first ambassador to the Community since independence is 56-year old father of seven Rudolf Castillo. The new ambassador is a journalist—he was trained at the BBC and the Central Office of Information—and spent a large part of his career in his country's information services, holding many responsible positions, before becoming Permanent Secretary, a post he held in three successive ministries, and, ultimately, head of protocol.

Congo

Congo's new representative in Brussels, 41-year old father of two Gaston Eyabo, is an ex-director of Congolese television. The post in broadcasting was followed by a spell as Congolese chargé d'affaires in Zaire, then as political adviser at the Embassy in Paris and then as director of the national post and telecommunications office. Before being appointed ambassador in Brussels, Mr Eyabo was ambassador first to Algeria and then to East Germany. o

Président Gaston Thorn and ambassador Gaston Eyabo

ERRATUM

There was an error in the caption relating to the name and title of the head of trade division at the ACP General-Secretariat, picture shown on page I, yellow pages of our issue N° 81.

The correct name and title of the head of trade division are: Patrick K. Chiwenda, Chief of Trade Cooperation Division. The *Courier* offers its apologies to Mr Chiwenda.

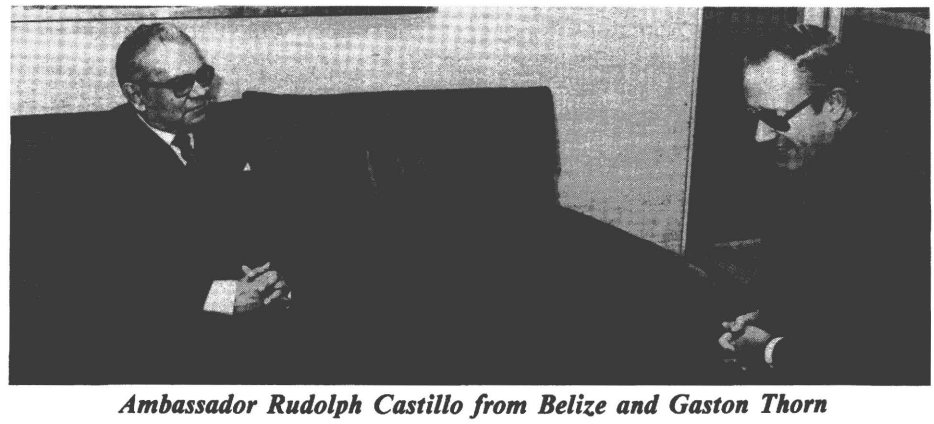
Cameroon

Jean Keutcha, who takes over from Mahmoudou Haman Dicko as Cameroon's Ambassador to the EEC, is an agricultural engineer and a civil administrator. He has been a prefect in his country's regional administration and held portfolios at the ministries for Agriculture and Foreign Affairs.

Mr Keutcha, who is 59 is married with three children, has written two books—one on the size of the coffee bush and one on Bamileke customs.

President Thorn in conversation with Jean Keutcha of Cameroon

Mr Castillo, who spent 25 years as a Reuter's correspondent and wrote for the Daily Telegraph and the Miami Herald, has also written a number of books and produced documentary films.



Ambassador Rudolph Castillo from Belize and Gaston Thorn

Can micro-chips replace irrigation?

Around Brasilia stretch the 150 million hectares of the *campo cerrado,* where only the most extensive kind of agriculture is practised: rainfed rice is grown for a year or two, and the land then reverts for a long period to poor-quality grazing. While generally homogeneous and easily worked with machinery, the soil suffers from a very high aluminium toxicity. Rainfall is abundant, over 1 500 mm, but during the rainy season a short dry spell, the *veranico,* can occur and seriously affect the crop. For this reason, farmers have been turning to irrigation schemes.

Meanwhile, however, scientists have been undertaking detailed research into crop requirements in an effort to pinpoint soil and climatic problems more accurately. They have measured rainfall and evapotranspiration rates, growing cycles, maximum root depths and vegetation periods, and studied plot characteristics and the methods of cultivation which are being used, with reference to soil preparation, sowing, useful reserve and runoff coefficients. IRAT's agri-climatic software makes it possible to produce, via a dialogue mode, a simulation of the water balance.

Applying this model to the *campo cerrado,* it was found that ten days without rain at the crucial point in the growing cycle could reduce the rice yield by more than 40 %. In addition to the lack of rainfall, three other factors have been observed. Firstly, the sunlight is stronger during the dry periods, humidity is lower and temperatures higher. Secondly, though the soils in the *campo cerrado* are actually clayey, in their low water retention they more closely resemble sandy soils. And thirdly, the high level of aluminium in the soil restricts rooting in the top layers and thus reduces the amount of solutes the plant can absorb from the soil.

On the strength of these findings, scientists can now concentrate on selecting aluminium-tolerant varieties and developing cultivation techniques designed to hold water in the soil where it is needed, thus doing away with the need for irrigation altogether. o H.B.

tion which by no means facilitates the sort of production that is properly adapted to the specific conditions of the hot countries. For example, the average power of agricultural tractors has increased fourfold over the past 30 years, keeping pace with trends in agricultural structures in the temperate parts of the world. But as things have not advanced so fast in the south, the equipment proposed is increasingly unsuitable for the intended purpose.

Towards a policy of research into input

So there are difficult problems attached to assigning a place to input in the agriculture of the hot countries. They are particularly difficult in view of the economic crisis which is hitting them particularly hard. Agricultural research is doing its best to come up with an answer to their needs by working to make the design and use of input as suitable as possible for their conditions. This involves four different things:

"Village coconut plantations: local varieties or hybrids"

There is controversy in a number of countries about the suitability of hybrid varieties of coconut palm for village plantations. Hybrids are said to be at risk because they are less able to adapt to variations in soil or climatic conditions, or unsophisticated methods of cultivation. Experience throughout the tropics, however, indicates that the hybrid varieties used in development programmes, such as IRHO's PB 121, can utilize soil nutrients more efficiently and thus adapt to a wider range of conditions than local types; in particular, they are more resistant to drought. Using the same amount of fertilizer, a hybrid coconut palm can produce twice the yield of local varieties, a differential of at least 450 kilogrammes per hectare.

Research aimed at developing even higher-yielding and hardier varieties is still going on. Scientists are counting on genetic diversification, using a number of hybrid types, adapted to local conditions, in a particular ecological milieu so as to reduce the risk of epidemic disease. They are also looking for more compact hybrids, with a smaller proportion of husk to fruit, which require less in the way of inputs, and are developing methods of cultivation employing incorporation of husks.

In conclusion, a suitable hybrid adapted to local conditions easily outperforms local varieties, and will justify the use of even the most modest amounts of fertilizer. To steer the small farmer away from hybrid varieties is to cripple his production and development potential. o H.B.

Adapting modern agricultural techniques. Modern agriculture has a rich fund of knowledge constituted by scientific work carried out all over the world. Instead of transferring the formulae and models of the north, as they are, it would be better to create original techniques with the aim of adapting them to local production and structures. This is particularly the case with work on intermediate mechanization (design and building of small 10-30 horse-power tractors). Some processes designed with the hot countries in mind can be widely applied in the temperate countries too, as, say, the use of ULV (Ultra Low Volume) crop protection methods shows. The ULV reduces the quantity of solution to be spread by 50 %. Now transfers of technology are a two-way affair. The diversity of situations in the hot countries today is one of our most important sources of agricultural innovation and it explains why the multinationals are interested in these regions in spite of the fact that economic conditions (political risks, customs barriers, limited export of profits etc.) are less favourable than in the industrial countries.

We should also think more about the use of input. This is a field where scientific investigation is called for and a considerable effort must be made with training and organization (agricultural advertizing services, soil and plant analysis departments etc.).

Keeping an open mind about new techniques. The problems of the present economic situation and the de-

lays in certain fields should not lead us to shun the results of new branches of science. The idea is not to reproduce a carbon copy of European agriculture in the south, but to use the experience of the farmers and the achievements of modern science to discover original ways that are in line with the development of the particular form of agriculture in the region in question. Modern biology and information science can play a considerable role here. Even if they are not the decisive factors when it comes to overcoming an underdevelopment that some people claim, the creation of productive, hardy varieties, certain techniques of biological control and microprocessing are already useful tools available to the farmers of the south.

Thinking in terms of systems of production. The remarkable results obtained through analytical approaches have sometimes resulted in people forgetting that the farm is primarily a system of elements which interact with each other. As Messrs Capillon and Fleury said in a paper presented to a recent CENECA symposium on input in Paris: "the farmer has an increasing number of techniques that can be applied to an increasing number of cases and he must choose from amongst them to constitute a coherent set of actions geared to a given yield. The growing of a crop should not be looked upon as a juxtaposition of operations grouped together under different headings (preparing the ground, sowing, fertilizing, protecting etc.), but as a logical, ordered sequence of techniques applied to growing, what Michel Sebillotte has called 'a technical itinerary'. The general aim of the technical itinerary is to create the most favourable conditions for establishing a crop and provide the necessary nutritional input to produce the anticipated yield. Within this kind of framework, the farmer combines various crop-growing operations, considering the possible interaction of different techniques and of the techniques with the environment. This means that the technical references the agronomist has to provide for the farmer have to cover the whole of the growing process and not just the effect of one or more factors of production on the plant stock or the yield".

Work on farming systems in the hot countries is developing fast. It is contributing to ensuring a more reasonable use of the factors of production by looking at the way they interact and the way they complement local resources.

Developing agricultural work organizations. In agriculture, as in industry, organization of the work load can improve the productivity of the factors of production and of the farm itself. What distinguishes agriculture from the other branches of industry is the generally small size of the family holdings. This means that only limited benefit is to be derived from improving the way work is organized.

However, with producers' associations, larger capacity of means of production can be obtained and their use rationalized, so each operation is easier and cheaper. Cooperation between farms is, therefore, a very suitable means of improving the way agricultural work is organized.

Unfortunately, in the hot countries, very little work is still being done on this subject—which is a very promising one, if European experience is anything to go by. But it is clear that it poses the problem of training for farmers (in the widest sense of the term) with full force.

The economic crisis we are now experiencing could lead some people to radically question the use of input. This policy would bring agricultural production back to where it was 50 years ago, as it would be difficult to improve on the knowhow of the people of those days. But the world and the people in it, in particular, have changed and we must try and develop a reasonable way of using input that will enable agriculture to provide the food, energy and industrial goods that man needs. If this goal is to be reached, the researchers and the farmers have to join together to investigate those fields and come up with techniques that are as circumspect as they are effective, as both these qualities, as it happens, usually go hand in hand. o H.B.

Cutting fertilizer costs

The use of fertilizer in French-speaking Africa for all purposes (including soil improvement) totals barely 450 000 tonnes a year; France alone, by way of comparison, uses 15 million tonnes a year. With the current recession and the rising cost of energy, however, consumption in Africa is stagnating or even falling; Senegal's purchases of fertilizer for its groundnut crop have fallen from 60 000 t to under 4 000 t a year.

This naturally constitutes a severe handicap to the expansion of agriculture in Africa. One way around the problem is to concentrate research on the more efficient use of existing agricultural resources. A number of approaches are being worked on:
— the development of alternatives based on the use of agricultural waste, either by direct incorporation or in the form of compost, biogas or manure;
— more efficent biological fixing of atmospheric nitrogen in crops;
— the use of natural phosphates, whether unprocessed, mechanically crushed, screened or granulated, chemically treated by partial acidification or to produce a more soluble phosphatic fertilizer, or simply ploughed into the soil or incorporated with manure or acidifying nitrogenous fertilizers;
— identification and utilization of other resources (or waste products), whether mineral, such as lime, dolomite, shells, slag from cement works or other industrial processes, and petroleum by-products, or organic—peat and waste from sugar refining, for example.

Such approaches are by no means without their problems, since it is not always easy to estimate either the extent of resources or their intrinsic value for agriculture (e.g. mineralogical and chemical characteristics of the newly discovered phosphate deposits in Matam, Senegal, dolomite beds in Upper Volta etc.).

Nevertheless, research under way in a number of countries is highly encouraging, suggesting that in many cases the cost of providing crops with mineral nutrients could be cut by a third to a half. o H.B.

How does the researcher see the problem?

by R. TOURTE (*)

As disagreeable and worrying as it may be, it has to be realized that the rural development of the Third World fails to reflect the considerable efforts being made by the people actually involved in it—the peasant farmers, the producers and the leaders of these countries—and by the international, bilateral, public and private institutions which have tried to help them take up the challenge of the 20th century, that of bringing rich and poor nations closer together (1).

Better liaison between developers, extension workers and the producers

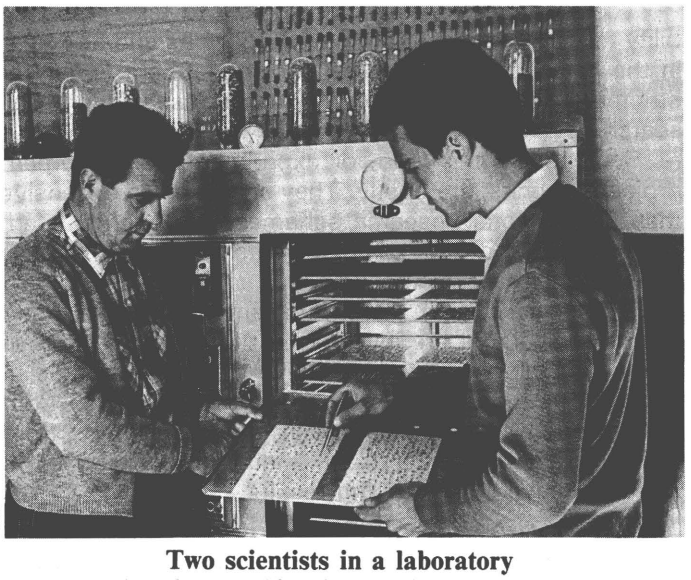
And, as always, when failure overshadows success, responsibility is sought and it is shrugged off, often with insidious bad faith. So the quality of work and the results of agricultural research (2), the competence and efficiency of the way techniques are spread, and the ability and even the willingness of the producers to accept technical progress, are all brought into question.

Such proceedings are neither fair nor serious to anyone who has been involved in the dynamic process of peasant societies seeking their development models. But, at the same time, the three sets of partners (the researchers, the extension workers and the producers themselves) admit that they do not know enough about each other and that in many cases they do not even understand each other.

(*) An agronomist at IRAT the Institute of Research into Tropical Agriculture.

(1) Extracts from an article sent to the Courier.

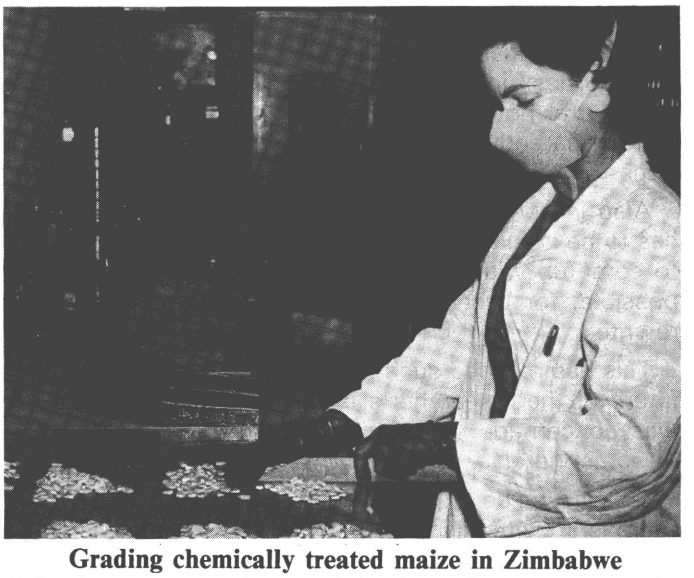
(2) The term agricultural research has a wider meaning here. It goes beyond technical dimensions.



FAO

Two scientists in a laboratory

Are they working in an "ivory tower"?



FAO

Grading chemically treated maize in Zimbabwe

"For decades researchers and developers have gone on trying to solve the problem of producers who have failed to take over the technological innovations" of research

One obvious answer has been to ensure better liaison between the three groups. Unfortunately, good intentions have proved difficult to put into practice and the weight of the institutions, the persistence of certain ways of thinking and old habits had also to be contended with.

But for decades researchers and developers have gone on trying to solve the problem of producers who have failed to take over the technological innovations which performed well on the stations and were spread by powerful, competent extension services.

Many a rural development scheme and the reasons for its success or failure have been recorded, commented and discussed. This is a much more modest article, aimed solely at summarizing the evolution of a researcher's perception of how agricultural research might contribute to this approach to rural development.

The reasons for difficulties

Researchers have long been aware that farmers, particularly peasant farmers, have often only partly used the results of research and sometimes failed to use them at all.

They are, of course, well informed about the reasons given for what they consider to be the failure of their mission.

Some of the reasons are perfectly well-founded, others are more subjective, impassioned perhaps and therefore unjust; but for some time now researchers have found one of them to be particularly valid. It is the inadequacy of contact with the realities of the rural world, the famous "ivory tower" metaphor which the unthinking always use to discredit research.

It has to be realized, as far as researchers are concerned, that the stringency vital for the analysis and understanding of the laws governing agricultural phenomena, and for the creation of innovations likely to break the most stultifying links, is better geared to the

control of factors in laboratories and on stations than to the extraordinary variability of field conditions.

Proper control of the situation in the field is and will remain essential. It has led to remarkable results, uncontested ones; in particular, it has revealed unsuspected agricultural potential in the tropics, including parts that were apparently afflicted with the worst of natural conditions.

Also in defence of the unfortunate researcher, it also has to be admitted that, for years, he has been expected to come up with simple technical messages, miracles if possible, for others to transmit and perhaps adapt or rewrite.

This has reached such a pitch that, in many cases, the future of the researcher's product, as far as application was concerned, was, institutionally speaking, the affair of someone else.

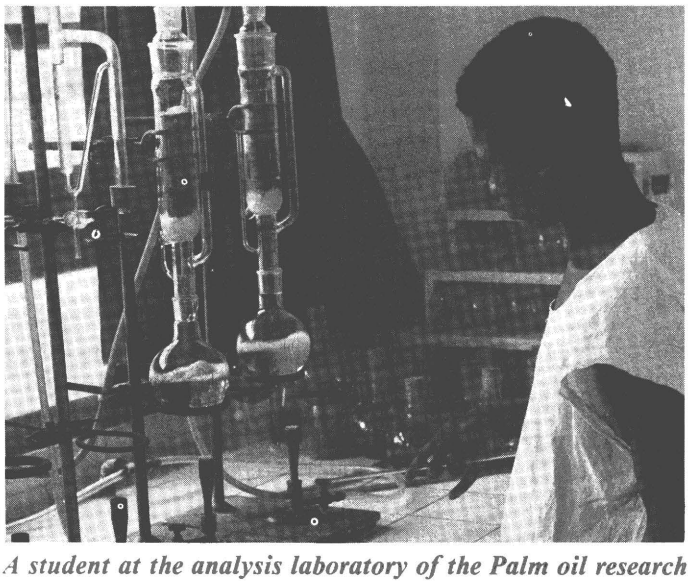
As was to be expected, an increasing number of researchers were displeased with this splendid isolation and the absence of responsibility for the way the results of their works are used. They thus decided to establish and maintain links between research and development. And they began working along a number of lines which, they felt, would bring them closer to the field of application for which their technology is the best vehicle for change and whose development is the ultimate aim of their research.

Towards a self-reliant and genuinely integrated development

Based on experiments that are doubtless dispersed still, but increasingly numerous and run by a wide range of institutions, a new approach to self-reliant and genuinely integrated development can now be adopted with every chance of success, provided that it:

— is a concerted effort on the part of producers, developers and researchers;

— is based on an analysis and diagnosis of existing production systems and structures, and aimed at the genuine concerns of development;



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A student at the analysis laboratory of the Palm oil research centre in the Ivory Coast. There is a need to recruit and train people to undertake the difficult task of agricultural research in the developing countries

FAO

An extension worker explains the characteristics of wheat to peasants in Ethiopia

It is necessary to establish a dialogue between researchers, extension workers and producers

— involves producing technologies that are right for the conditions, aims, resources and means of the environment, i.e. generated by a symbiosis of the dynamic forces and creative imaginations of the peasant farmers, researchers and people who spread the techniques;

— thereby contributes to responsible decision-making by each of the categories of producers and by each farmer, according to their specific aims, needs, perception of risk and so on;

— is run in rural areas of significant size (a number of villages, a rural community, several thousand hectares), so that the institutional (credit facilities, cooperation, etc.), logistical (storage and marketing), professional (farmers' organizations), social (tenure and land ownership) and other aspects can be taken into account and extrapolation is possible;

— provides for training for the various people involved in this new development, i.e. the peasants, extension workers, developers and researchers who are able to go into the field and devise new technologies.

However, although there are real chances of success, and they are probably high, there are still some considerable constraints:

— There are still too few people able to take responsibility for this approach, both in discussions and above all in the field, and their training and recruitment is still restricted by the demand for systems-research and research-development.

— Schemes of this kind, or experimental development projects or units, are costly. They are far more expensive than conventional research schemes, the over-isolated, technocratic and ill-directed aspects of which have, in fact, been largely rejected.

— These schemes, in which peasants, researchers and extension workers are involved in the joint definition of suitable development models, have their political, social, economic and financial risks. They are a long way from the closed-ended projects which have safe ratios from the start (even if they are only a question of pure form) but often have disappointing results.

But many people are not yet ready to pay such prices and take such risks and there lie the essential limitations to the extension of the approach suggested. ○ R.T.

Farming in the tropics

by C. H. H. TER KUILE (*)

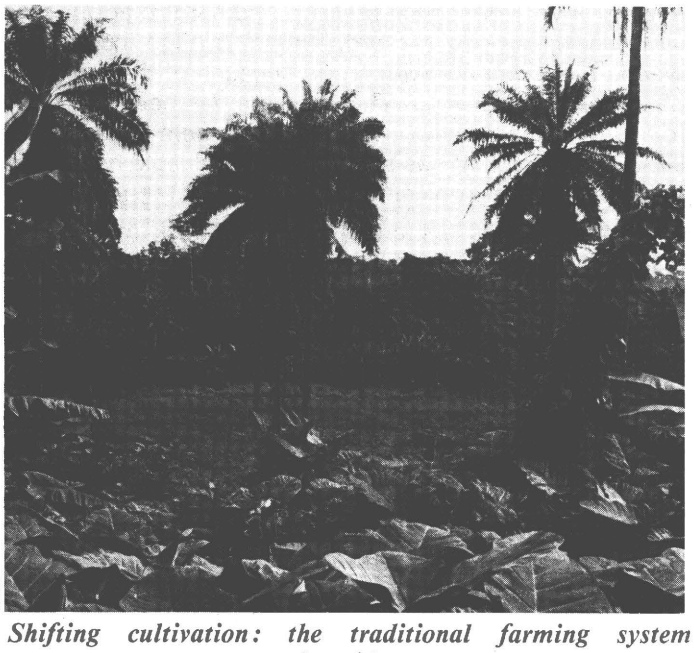
When the International Institute of Tropical Agriculture (IITA) started operations on its 1 000 hectares experimental site in the tropical forest just north of Ibadan, Nigeria, nearly 14 years ago, its initial organization included a major research programme entitled "farming systems".

At that time the term "farming systems" was only vaguely understood. It referred mainly to a holistic conception of agriculture, encompassing the complete universe of an agricultural enterprise including its people, its social framework, and its channels with the outside world.

The intention, however, was quite clear. The institute was to tackle the major problem of tropical agriculture—the inability of land to sustain annual food crop production for more than a few years before productivity deteriorates to the extent that the land has to be abandoned and new jungle cleared for further production. This bush fallow or shifting cultivation system is common to nearly all the world's humid tropical zones. The only exception is the irrigated paddy rice areas and regions with young soils derived from volcanic or recent sedimentary materials. In Africa alone, the leached, acid and infertile soils cover 6.6 million km^2 or approximately 50 % of the humid and sub-humid ecological climatic zone.

It was clear in the late 1960s that the approach used successfully by other international agricultural research centres, the concentration on the improvement of one or two crops by genetic and agronomic means, would not be effective for the regions for which IITA would be responsible. The problems of agricultural productivity in the humid tropics were only partly due to poor plant productivity, and they covered a number of aspects, chiefly poor soil productivity, harsh climate and high humidity, lack of traditional technologies and the fierce competitiveness of the natural vegetation. What was needed was a broad front of research that would be interdisciplinary in nature and would use a holistic approach in solving the many interacting problems. For better or for worse this became known as the farming systems approach to agricultural research.

(*) Assistant director and leader of the farming systems programme of the International Institute of Tropical Agriculture (IITA) Ibadan, Nigeria.



IITA

Shifting cultivation: the traditional farming system in Africa

The shifting cultivation

Since those years, views on what constitutes farming systems research have evolved at IITA, at other research centres, at universities in Europe and the Americas. Before reviewing present approaches and thinking, however, it is useful to examine the results of this new approach in agricultural research. Rather than spending years attempting to refine and define the concepts of farming systems research, the IITA scientific team started pragmatically by trying to discover why, in the first place, the small tropical farmer had invented the shifting cultivation or bush fallow system, and why the soils became unproductive and useless after only a few years.

The results of this research are quite clear, even though solutions to the problems in terms of the economic and social capacities of the small farmer are still difficult to design. What is now known is that when a farmer clears the jungle and starts cultivating that land, the soils changes rapidly in many characteristics. In scientific jargon it is called "degradation". All these changes appear to be for the worst. IITA experiments show that the usual western farm practices of ploughing, cultivating, harrowing and disking have an effect often opposite to the beneficial effects these husbandry methods produce in the temperate climates of the world.

Chemically, the land becomes more acid very rapidly. Soil tests clearly show that essential plant nutrients are quickly lost, even with reasonable quantities but expensive fertilizers. Physically the soil seems to collapse on itself. It becomes denser, less porous. Often its texture changes so that the finer particles, the clays, disappear or wash away and one is left with a sandy or gravelly material that is resistant to plant roots and that cannot retain the moisture for more than a few days under the searing tropical sun. The capacity of the soil to form aggregates—small lumps—disappears because the binding material, the soil organic matter, has disappeared at a phenomenal rate. The original organic layer created by many years of forest cover will often disappear in one or two years, leaving less than a tenth of the original amount of humus to stimulate the life-giving processes that take place under our feet.

A failed experiment

It did not take the IITA farming systems research team long to discover the hard facts of life of the tropical small

farmer. The first lands at IITA headquarters were developed with all the best means and experience that western science and technology could bring to bear. The latest equipment and land preparation techniques were used. The best anti-erosion techniques were installed. Fertilizers and better seeds were used in abundance. Weeds were carefully chopped out or sprayed away with herbicides. Yet in five years crop yields started to drop precipitously, the land became sandy and gravelly, and the signs of plant malnutrition and even toxicity appeared. The terraces and contour stripes did not work in Nigeria's humid tropics. IITA was faced with an embarassingly visible example of how not to farm in the tropics.

The reason for failure

The farming systems programme team, however, was not satisfied applying just the latest western technologies (many scientists came from other parts of the world, including West Africa and Nigeria). A number of simple long-term experiments began to clarify what happens, what goes wrong, when the degradation process occurs. It is now clear the role of original vegetation and its residues, the leaf litter, creates a continuous recycling and filtering system in the tropical jungle which prevents nutrients and moisture from seeping away through the very poor sub-soil materials. The plant and tree roots keep pumping up moisture and dissolved nutrients and the organic materials function as a retaining filter that slows down the speed at which these essential ingredients trickle down into the lower strata of the land surfaces.

These organic residues not only function as filters for nutrients, but also absorb large quantities of water. They form an organic nutrient base for the soil fauna and for the immense population of microbial organisms that create a "living soil." This organic matter also functions as a glue between soil particles, forming clumps or aggregates with large pores which allows air to pass into the soil and carbon dioxide to escape. It also prevents the erosion that is so common in many areas of the tropics.

Once cleared the land contains fewer and shallower roots so that the cycle between the subsoil and the surface is broken. Even worse, after clearing the forest shade that protected the soil the ground surface layers are subjected to temperatures of up to 45 °C, whereas under the forest canopy these rarely exceeded 26 °C. This drastic rise in temperature not only causes a drop in biological activities, but it literally burns up the accumulated organic materials. The effect is like a vicious downward spiral where the decline in organic life and residue creates a collapse of the soil structure and a drop in retention of water and nutrients, an increase in acidity, a decrease in plant growth that in turn reduces the supply of life-sustaining organic residues. The collapse of the porous soil structure means that it becomes less permeable to rain and susceptible to erosion from the hard tropical rain.

The answer

The answer to this tropical riddle appears to lie in the management of the soils and, above all, of the organic residues of plants growing on these soils. The answer is to imitate as closely as possible the original forest system. This is contrary to all the practices of modern western agriculture.

IITA

Maize and cowpea in a multiple cropping system

No-till system

The IITA farming systems programme has developed a number of alternatives that prevent or delay the breakdown of soil productivity. The no-tillage system in which the plough and diskharrow are discarded and the crops are sown directly into the untilled land. Commonly known as no-till or zero-till, this practice preserves the crop residues on the surface of the soil. IITA crop plots under this system continue to produce very good yields after a dozen years, whereas neighbouring plots under normal cultivation and with no crop residues have long since become semi-sterile.

While this appears to be a simple solution, the no-till system is very difficult in practice and hard to adopt on a large scale. Among the problems is a huge increase in weeds that compete with crops because of the omission of ploughing or disking. This problem has been the basis for the programme of weed management research at IITA—research that has spun off very valuable new technologies for the tropical farmers.

Other problems are created by the thick mulches of plant materials on the soil surface. These layers of straw, stems and leaves create havoc with western-style farm equipment, plugging up planters and other tools. This problem has resulted in the development by the agricultural engineers of IITA's programme of a series of planters and applicators that are designed not only for small farmers, but are also capable of operating under very 'trashy' field conditions.

Alley cropping

The need for developing practices similar to the recycling system of the original forest has been the motivation behind another very promising alternative that com-

bines trees and crops in a unique agroforestry system. This practice, dubbed "alley cropping," consists of rows of fast-growing trees between broad beds of field crops. Planting is often done along contours to prevent erosion. The preferred tree species are two leguminous nitrogen fixing shrubs, *leucaena* and *glyricidia,* brought in from Asia and South America. The trees are pruned at regular intervals during the growing season and the clippings form a high value residue that resupplies an organic matter mulch. Although pollared, the vegetation provides some shade for temperature control, and it is sufficiently deep-rooted to continue vigourous growth during the five months of dry weather at Ibadan. It is suspected the deep roots also provide some recycling of nutrients that escape in to the subsoil.

Alley cropping fields at IITA and other locations has produced good crops for at least eight consecutive years. It appears that it can substitute for a bush fallow cycle. But again, this alternative system had to develop its own management technologies and practices and some of the problems have not been resolved. The system is, however, adapted to small farmer agriculture in several parts of Nigeria, and extensive testing is underway under actual farm conditions in conjunction with a variety of cropping practices and rotations. Alley cropping also produces firewood for cooking and stakes for yams and fencing.

Mulches

Spurred by the crucial importance of organic matter in maintaining soil productivity, IITA scientists have launched an intense programme of research into the production of dead and live mulches. Most of the studies have concentrated on leguminous plants with good nitrogen-fixing ability and vigorous growth. It has been found, however, that many of these decompose rapidly under microbial action because of their high protein content and do not give an adequate, lasting protection from rain and sun. It appears a vigorous cultivar of the Velvet Bean (*mucuna utilis*) can produce 10 to 20 tonnes of organic mulch in a year. When it dies it leaves a thick carpet of vines and leaves resistant to deterioration, allowing a good germination of maize when planted into this cover with a IITA rolling injection planter. The use of this cover-crop in a food crop production cycle is proving, under proper management, to benefit soil fertility maintenance. The thick mulch and vigorous growth suppresses weeds for at least one cropping cycle, decreasing the farmer's investment in time-consuming weeding. Earthworms appear to favour this dense cover-crop, and fields of mucuna are covered with the earthworm casts after a year.

Another approach in producing thick mulches is growing them simultaneously with the crop. This is done by seeding creeping legumes under maize or sorghum and managing these legumes so they do not compete with the food crop, but suppress the weeds. This agronomic sleight of hand is difficult because creeping legumes have a habit of forming vines that climb maize and pull it down. While chemical growth retardants slow this tendril formation, it is not an answer for the small farmer. The search is on for a creeping legume that does not climb, fixes nitrogen and beats back weeds—all at the same time. In the meantime, the live mulch system continues to be a subject of scientific study and hope for the future. The IITA team already knows the system has great promise in reducing the need for fertilizers and other expensive items often out of reach of small tropical farmers.

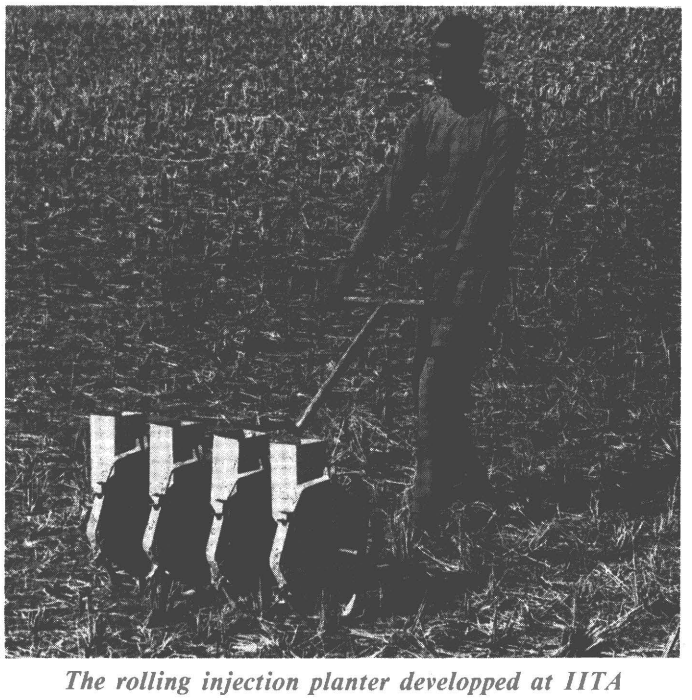
New lines of research: the dense pack system

In the last few years the farming systems programme of IITA has taken new lines of research generated from previous studies and from the needs of the many small farmers that maintain a lively interest in what goes on in experimental fields around IITA's laboratories and offices.

One promising approach is that of various forms of multiple cropping, either in relays or by interplanting different crops at different times. Experimentally as many as four crops—maize, cassava (manioc), okra and melons—have been grown in various mixtures with considerable success. Local farmers, however, are even better at multiple cropping and often intermix crops of many different varieties. The system generally is very promising although individual yields of various crops are often much less than when produced in pure stands. The mixture provides increased security for small farmers against crop and investment losses. If one crop is hit by pests, the other crops in the mixture may still produce the necessary food and income for the families. It also appears this "dense pack" system provides better soil protection against rain and sun and allows maximum production of organic residues and recycling roots to prevent soil degradation.

Fight against the "black sigatoka"

The farming systems programme has also undertaken research into the improved production of a very important but often ignored tropical food—plantains and cooking bananas. These are close kin to the sweet dessert



IITA

The rolling injection planter developped at IITA

bananas served on western tables. They are eaten cooked or fried and are a common feature in all farmyards in the humid tropics of Asia, Africa and Latin America. Mainly a subsistence crop, little research has been done on this important family diet food, while more and more problems are appearing. The newest of these is the so-called "black sigatoka," a leaf fungus that is to plantains what the black plague was to medieval Europe. The fungus wiped out cooking bananas in Central America in a few years and is now spreading through Africa. IITA is actively engaged in finding resistant plant material against this disease and is cooperating with other development agencies to create a worldwide programme for plant breeding and improvement of this valuable food crop.

In the last 18 months IITA's farming systems programme has linked up with many other institutions in an attempt to develop better ways for transferring research findings to farmers. It is also establishing links with farmers to determine what they prefer changing in their farming systems.

Traditionally, agricultural research has had a preference for carefully managed experiment stations where outside influences and uncertainties could be controlled and results accurately measured. Unfortunately this trend often resulted in spectacular results at the experiment station, and distressing disasters on the farmer fields. The small farmer and his family do not have the means to coddle a crop like a researcher. As a result, the varieties, chemicals and intricate production methods developed by researchers are generally not any better under the farmer's low-level management techniques than the materials and methods the farmer used before trying the scientists recommendations.

A regional programme for West Africa

This has led to the creation of a regional programme for West Africa for on-farm adaptive research (OFAR), in which IITA will play a key role in the development of methodologies and training through national research and extension institutions.

The OFAR system contains two major elements: a diagnostic socio-economic and agronomic research phase, and a cooperative experimental programme with on-farm involvement in ecological areas. The diagnostic research and field experimentation complement one another. It will define what is needed at the small farmer level and what are farmer expectations, and it will evaluate research results under actual farm conditions, finding out what is good and what is bad with the scientific proposals and materials. The programme has met with considerable enthusiasm from national scientists and many development agencies that have seen their agricultural development projects flounder with the introduction of inappropriate technical innovations into a traditional subsistence agricultural economy.

The OFAR activities of IITA will increase in importance in the years ahead and will lead to a perceptible shortening of the time it takes for the scientific innovations of IITA and other research institutions to reach the small farmer. ○ C.H.H. ter K.

Animal traction: a technology for smallholder farmers

by M.R. GOE and Guido GRYSEELS (*)

In recent years, the use of draught animals as a source of power for farm operations has received widespread attention as a possible technology for the majority of smallholder farmers in developing countries. This is as a result of previous failures to introduce a rapid mechanization of agriculture, mainly with tractors. Attempts to introduce more capital intensive technologies were unsuccessful because of their high cost, aggravated by the energy crisis, which put them beyond reach of small farmers; the need for complementary inputs such as fertilizers, improved seeds, pesticides, herbicides and irrigation; problems in securing spare parts and maintenance services; inadequate farmer training; lack of foreign exchange at the national level; and an insufficient understanding of the available resources of the target population. Also, mechanization was promoted on the assumption that large scale farming would emerge in developing countries and that animal traction was considered backward and did not offer any scope for immediate agricultural development. However, small scale farming, often at subsistence level with only limited market outlets, has remained the basis of agricultural production, making the introduction of capital intensive technologies problematical.

Promoting animal traction

This has prompted international donor organizations to promote animal traction as an alternative development strategy for smallholder farming systems, notably in Africa and Asia. But is the renewed interest in this technology the consequence of substantial amounts of relevant on-farm research which indicate that animal traction can effectively improve overall farm productivity or is it merely a second choice that has been grasped as a panacea to achieve agricultural progress?

Comprehensive assessment of farm-level constraints and available support services are necessary steps for evaluating the conditions in which present systems can integrate a particular technology. This article argues that animal traction must be viewed objectively as a potential means of improving agricultural productivity in Africa and identifies those areas where pertinent research and planning are needed.

(*) Animal scientist and agricultural economist respectively, International Livestock Centre for Africa (ILCA), PO Box 5689, Addis Ababa, Ethiopia. The views presented in this article are those of the authors and not necessarily those of ILCA.

Animals utilized throughout the world for traction include cattle, horses, mules, asses, buffalo, camels, yaks, llamas, alpacas, reindeer, elephants, elk, moose, sheep, goats and dogs. In addition to furnishing power for cultivation, transport, packing, harvesting, threshing, water lifting and hauling loads, these same animals provide milk, manure for fuel and fertilizer, wool, hair, offspring, and by-products such as hides, horns, hooves and meat at the end of their working lives.

In sub-Saharan Africa, mainly oxen, but also other cattle, horses, mules and donkeys are used for draught. They have been used in northern Africa and Ethiopia for centuries, whereas in the other parts of Africa, their introduction was the result of attempts by different colonial administrations to expand cash crop production.

ILC

Animal traction:
"increased use of draught animal will allow for substantial increase in land area cultivated and labour productivity"

However, expansion in the use of draught animals from the early 1900s to the present in former colonies has been very limited. This has been due to several reasons (1): in many areas livestock ownership is a nomadic practice with crop cultivation being mostly confined to sedentary farmers; diseases, such as trypanosomiasis, severely limit both the use and keeping of animals in areas infested with tsetse flies; the failure of animal traction training programmes to point out to farmers that benefits would only occur after several years' experience in using this new technology; land tenure patterns restricting expansion or consolidation of cultivable areas; inadequate feed and water supplies for the animals; soil erosion caused by improper tillage techniques; inadequate support services such as extension, veterinary care, spare parts and marketing; and low profitability.

Investment problems

The outcome of past investments in animal traction projects has often been disappointing. In common with other technical innovations, development efforts with draught power have tended to stress the technical innovation without an adequate understanding of the relationships between the biological, economic and social components of the agricultural production systems concerned. Of 125 animal traction projects in French-speaking Africa reviewed by Sargent et al (1981) only 25 had sufficient data to be assessed in detail.

Many studies were conducted on research stations where results were obtained under management conditions beyond the means of most livestock producers. Such studies are risk neutral and do not reflect farmer decision making which can be markedly affected by changes in weather, pests, animal health, market prices, household priorities and available resources. Results were sometimes further confused, notably in yield measurements, because it was not clear whether increases were due to land preparation, fertilizer, seed or a combination of the three. In some cases, the new technology was not labour saving but only labour shifting so that bottlenecks in labour supply changed from the time of cultivation to the time of weeding.

Nevertheless, in spite of this, animal traction has remained in use in all but a few African countries. The extent to which this use can or should be increased will depend on field research results which demonstrate achievable production benefits, taking into account the adoption problems and objectives of smallholder farmers.

Exploiting the complementarities

Traditional smallholders in Africa supply the bulk of agricultural output and in most areas their farming systems are dominated by a mix of crop and livestock production. If Africa is to avert a desperate food crisis, then productivity increases must be made on these smallholdings. Exploiting the complementarities which exist between the crop and livestock enterprises is one direct way of substantially increasing overall resource use, efficiency and production.

Major constraints in African smallholder agriculture are timeliness of cultivation, seasonal labour shortages and low soil fertility. Increased use of draught animals will allow for substantial increases in land area cultivated and labour productivity, thereby overcoming important obstacles to achieving food self-sufficiency.

The benefits

The benefits of using animal in addition to human power can be summarized as follows:

(1) Summarized from information compiled by Sargent et al (1981); Eicher and Baker (1982); and Munzinger (1982).

(a) improved cultivation and crop production through more timely and deeper ploughing giving improved seedbed preparation and earlier planting; better drainage and moisture conservation and good weed control; cultivation of larger areas; more efficient threshing; and improvement of pasture production;
(b) easier transport of inputs and outputs by carts, sledges or back packing;
(c) intensification of production through closer integration of crops and livestock, e.g. through use of animal manure to improve soil fertility and soil tilth, use of crop by-products as animal feed, etc;
(d) increased cash flows and net incomes through improved productivity and higher output;
(e) by keeping livestock for draught purposes, farmers can take advantage of the other products including milk, meat, manure for fuel and fertilizer, hides and skins, horns, hooves. Furthermore, livestock are a capital asset realizable in times of need;
(f) farm labour is released for other activities, thereby increasing labour productivity and reducing labour drudgery;
(g) the animals can be used for tasks such as water lifting and construction of ponds, dams, soil conservation structures, etc;
(h) national economies are stimulated by reducing the dependence of agriculture on imports and the development of non-agricultural sectors through the links with small scale industries and rural craft production.

At present, animals cultivate approximately 15% of the area cropped each year in sub-Saharan Africa according to the 1981 ILCA annual report. There is substantial scope for a rapid increase in this figure. This can be done by careful development of animal draught systems in areas where it is not current practice and by improving existing draught animal systems. However, care must be taken not to repeat past mistakes.

An overlooked element

The most crucial component in a system employing animal traction is the animal itself. This element is commonly overlooked or given only slight attention by those promoting animal draught. Rather, much emphasis has been given to implement design and related crop production aspects. Only limited information is available for draught animals in the areas of nutritional requirements when worked at variable rates over different time periods, the use of different breeds and crossbreeds for draught; the effects of physical conditioning and thermal stress on rate and duration of work; and the effects of work on reproduction and lactation. Research in these areas has been conducted primarily on experiment stations where, as already noted, inputs and resources were not constraints. Often the only consideration given to the "animal side" of a traction programme is veterinary care. While there is no question as to the importance of good animal health, emphasis must also be directed to other areas, especially animal nutrition, management, and training.

The fodder problem

Feed resources severely limit the use of draught animals on smallholder farms. Often, the animals are weak or in poor physical condition prior to, or at the beginning of the wet season when tillage requirements are to be met. This factor can affect timeliness of planting, frequency and depth of tillage and type and size of implements used. Inadequate fodder production can, however, often be solved by more efficient use of the crop residues and by-products, growing of special purpose fodder crops and pasture improvement.

Proper training and management of draught animals is prerequisite to attaining the full benefits of animal traction systems. Equally important is farmer training in the technology. Studies by Barrett et al in 1982 in West Africa indicate that it takes three to four years before farmers are able to efficiently integrate an animal/implement package into their present system. This can have severe repercussions for farmers who are obliged to meet loan repayment schedules during the first few years, and therefore calls for a flexible credit system to be available to smallholders adopting a draught animal package.

The problem of tsetse flies transmitting trypanosomiasis may be solved by using trypanotolerant cattle as traction animals. Since 1980, ILCA has been operating a research network on trypanotolerant cattle to study the productivity of these breeds.

Recommendations

The possibility of using animal power to increase agricultural productivity of smallholder farmers exists, provided that adequate planning is done before its introduction. However, caution is required. Although animal power has a large potential, many past efforts have failed because of an inadequate understanding of how farming systems and rural societies function. Baseline surveys must be carried out at the traditional farm level to determine the potential of any particular farming system for integrating this technology. Implementing policies prior to having such information will only result in poorly executed programmes which are short-lived and ineffective.

Many agencies are presently involved in research and development on animal power in Africa. However, there is little exchange of information and experiences among these groups. As a result, efforts are often duplicated due to a lack of knowledge on what has been done previously. In this way scarce resources are being wasted. It is crucial, therefore, that the exchange of knowledge between researchers, planners and donor organizations be improved. For these reasons ILCA proposes to establish a Pan-African network for research, documentation and training on animal traction. The network would foster a clearer focus for research and development efforts, encourage professional exchanges, disseminate relevant research results and provide opportunities for training in this key aspect of African agriculture. Such a network will not only provide a better understanding of the role animal traction could play in African farming systems, but also allow for the identification and evaluation of other appropriate technologies for a further improvement in the productivity of the smallholder agricultural sector.

o R.G. and G.G.

Agricultural machinery for the Third World

by Marc RODRIGUEZ (*)

The introduction of agricultural machinery into the developing countries and its more widespread use there has implications for two areas—that of a state's agricultural and industrial policies. If we are to be sure the machinery is suitable we have to study the structure of peasant society, that of agriculture generally and those of industry and handicraft, in other words, the structure of all the links in a chain, starting from the invention of a tool, through the testing of it, its manufacture, and on down to its use and maintenance.

It is clear that the problem of whether the agricultural equipment on an industrial palm plantation of 5 000 hectares is suitable or not is not the same as that presented by a farm covering one and a half hectares in a dry state in India.

In the first case, traditional farming does not enter into the picture; it may even have been destroyed at the outset and replaced by expatriate workers who repair, maintain and train local staff to operate machines that might be very sophisticated indeed. Thus, certain developing countries have set up their agricultural system and their research on the basis of heavy agricultural machinery—countries such as Brazil, China and India.

There is a similar case in Africa—Algeria—but here it has been much less successful; the option of heavy mechanization was taken early and has virtually replaced all other forms of mechanization.

However, the typical outcome of this kind of mechanization, transposed from Western agriculture, is very much on the negative side. It is removed from its protective cocoon and very soon turns into a heap of scraps of metals; there are countless examples of decisions, by nations or individuals, that have led to bitter failure. What is most worrying about these failures is that, while the introduction of such solutions dislocates the traditional productive systems, it does nothing to replace them with more efficient ones. The result—and here imitating the model of heavy mechanization is probably only partly responsible—is that food production in Africa has been brought slowly but surely to a state of collapse. Many of the resources and energies of national policies are expended on capital development in the form of heavy mechanization, but this is of benefit especially to cash crops. UNIDO has estimated that only 5 % of the agricultural population in the developing countries use tractors, 60 % use only hand tools and between 20 % and 30 % use simple machinery, including that drawn by animals. Also, it should be noted that, since the oil crisis struck, the general trend has been for mechanization to remain static or even regress (1).

(*) Applied research engineer with GRET (Groupe de recherche et d'échanges technologiques), a French organization dealing with the exchange of technology, particularly appropriate technology.

(1) UNIDO: Worldwide study on the agricultural machinery industry.

In the face of these figures and such results, there has been a growing awareness since the early 1960s of the need to take account of requirements in respect of a whole range of machinery and adapt agricultural and industrial strategies to real life situations. This sense of awareness had some effective precursors, in the form of research and development men.

First of all, it was in the '50s and '60s that a wide range of animal-drawn tools was developed, together with an idea that was to be a success and which was inspired by mechanization—the idea of multipurpose machinery, which also encouraged standardization.

Instead of having a different tool for each operation, as with the conventional animal traction system, the farmer has a basic frame with a toolbar. Hence, if he wants to mechanize any operation, he does not have to buy both the frame and the tool but only the tool, which he then fixes onto the frame—a one-off purchase. This idea led ultimately to the frame mounted on wheels with tyres.

Another interesting feature of this equipment is that a special process is used to manufacture the frame, meaning that it can be made locally—or at least most of it can—without the need for any large-scale investment. Nevertheless, there is still a problem with production of the working parts for countries ill-equipped with industrial plant and having a limited market. This type of part should be manufactured for a regional market, yet to be identified, in factories that could also produce ranges of other products.

Such equipment is still expensive for a good many farmers, particularly for those with no cash income. It is not by chance, especially in Africa, that the use of draught animals has spread more in areas where export crops such as groundnuts and cotton are grown—areas where, what is more, agricultural extension work provides good coverage and where there are widespread credit facilities.

Although introducing the use of draught animals helps step up work productivity and intensify crops, which is the ultimate aim of all modern technology, it also implies far-reaching changes to the production systems. These changes slow down the introduction and can prove inconvenient, as is the case with row seeding, which makes mechanical weeding possible—and even mechanical harvesting in certain cases—but which does not go together with the state of anarchy often found in Africa as regards the association of crops. Certain crops are grown with others in order to space out the harvest for a continuous food supply.

GRET

For all farming operations there are now general light mechanized solutions, adapted to small-scale farming or intensive work

While we are on the subject of precursors, we should look at the FAO's work in the '60s and '70s.

In 1960, in his well-known work *Farm implements for arid and tropical regions,* H.J. Hopfen drew up what should be regarded as the research and development charter for agricultural machinery. To start with, he made an inventory of traditional technology, which was probably incomplete but which was to be expanded during the '70s with the advent of the appropriate technology school. His theory was that ingenious ideas have been emerging for thousands of years—they are not born only in research stations—and it is not sensible to go looking for a more efficient hand tool than a scythe for harvesting fodder crops (2). He went on to explain how such techniques could be improved. The new tool should:
enable the work to be carried out efficiently and speedily, with the minimum fatigue; not be liable to injure the operator or the animal; be light to transport; be quick to use; and be made of materials that are easily obtainable.

Following along these two lines of action—inventory and improvement—there still remains a lot of research to be done in the tropics and there are many lessons to learn for development. Much needs to be done, too, to spread knowledge of such work and this is one of the aims of GRET. However, we must admit that a good deal of progress has been made in recent years as regards spreading the use of appropriate technology, drawing up inventories of traditional technology and seeking improvements or simple innovations. International organizations all have their departments working on simple tools, tillage operations and processing, and many universities have appropriate technology departments.

It is a fact that more genuine effort has been made in the '70s and early '80s to develop small-scale mechanization. It is booming in Asia, and not only in Japan either, though the advantage of the latter country is that it has a worldwide market. There is now a small machine for virtually every kind of agricultural operation, suitable for medium-sized farms or for intensive work.

In China, France, Germany and Japan there has been a great deal of research—and in certain cases even production, subsidized in many instances (France and Germany)—into the low-powered 12 to 35 CV tractor. The aim of this work is to produce a simple machine and encourage its manufacture locally.

It goes without saying that the number of potential users is limited to those who can afford to buy the machines, even given buyers' and users' cooperatives. Nevertheless, such machines do open up new prospects for middle-range farms.

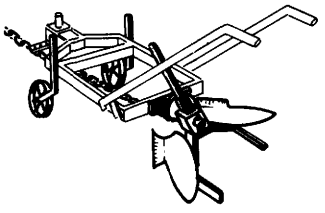
Once we have acquired detailed and varied knowledge of the agricultural machinery requirements for each system of production, provided it has an adequate market, the outlook is promising. Recent studies carried out by CEEMAT and SEDES (3) have shown what research workers can expect from such analyses in terms of identification of their own research programmes.

As regards the energy problem, which has become crucial over the last few years in countries with no fossil-fuel resources, research has given us a glimpse of possible interesting ways of using fuel based on alcohol or vegetable oil (for example, Cleveland Discol). Gasifiers of modern design are reappearing on tractors, as welcome echos from the past. However, they are still only prototypes which now need to be tried on a larger scale.

There has been some really revolutionary research recently into no-tillage cultivation methods. It is difficult to foresee their impact because, although they cut down considerably the problems of energy supply, they cause problems with weeds. The solution put forward by the IITA in Ibadan (Nigeria) involves chemical weedkillers. This can be dangerous if it is not carefully controlled but there is, nevertheless, still a good deal of interest shown in the method, because it produces very spectacular results in damp, tropical climates in terms of water- and work-saving, soil conservation and fertility monitoring.

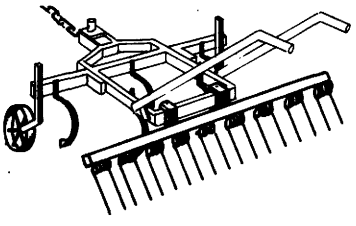
A discovery in the Ivory Coast can give the Alpine farmer ideas too. Mr Maurice Ogier of CINAM (4) proved this with his "Pangolin", a small build-it-yourself tractor with a diesel engine which can be put together in a country workshop without the help of machine tools because it is so cleverly designed. When he got back to France, Mr Ogier got in touch with CEEMAT and a group of farmers in the Alps and adapted his tractor for use in hill farming. This led to the emergence of the "Yeti" and the "Mouflon", versions of the small half-track tractor for use on dry Alps. o D.M.R.

Examples of new technologies



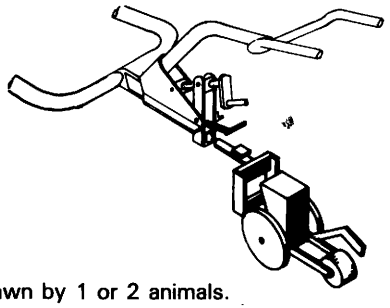
REVERSE PLOUGH

Drawn by 1 or 2 animals for farm of 5 ha.



TILLER-HARROW

Drawn by 1 or 2 animals for farm of 5 ha.



SEEDER 1 ROW

SEEDER 2 ROWS OR A QUICK COUPLING BAR

Drawn by 1 or 2 animals.

(2) This may not be a good example, since the scythe is suitable only for people who like working standing up.

(3) *Etude des besoins en machinisme agricole de 24 pays d'Afrique au nord de l'équateur* — SEDES-CEEMAT.

(4) CINAM — «Etudes et aménagement du territoire, ZOLAD, rue du Caducée, Montpellier F-34100».

Roots and tubers improvement: IITA's experience

by S. K. HAHN (*)

The root and tuber improvement programme at the International Institute of Tropical Agriculture (IITA) comprises cassava, sweet potato, yam and cocoyam. The objective is to develop improved varieties with high stable yield, high quality and plant characteristics suitable for efficient cropping systems. The programme has an interdisciplinary team approach involving agronomy, breeding, entomology, pathology, nematology, tissue culture, physiology and biochemistry. Work is done through a core programme in Nigeria and cooperative programmes, one in Zaire and one in Cameroon.

Cassava

Africa produces 48 million tonnes of cassava annually from 7.4 million hectares, and this staple food crop provides more than 50 % of the caloric requirement for 200 million people on the continent. Since its introduction from Latin America many years ago, cassava has played a vital role in alleviating famine conditions in Africa by providing a sustained food supply when other crops have failed.

Cassava has these recognized advantages: adapts to diverse environments and farming systems; requires few production skills and limited inputs; stays in the ground for up to 24 months until required for consumption; and remains relatively drought tolerant, surviving four to six months of dry weather.

Regardless of these and other favourable characteristics, the average cassava yield in Africa has been very low—6 tonnes/ha, compared with a potential of 15-20 tonnes. This low average yield is due primarily to cassava mosaic disease, cassava bacterial blight, and more recently, to cassava mealybug and the green spider mite complex. The latter two are believed to have been introduced from Latin America as well.

Cassava mosaic disease, first reported in East Africa in 1894, is endemic in all cassava growing areas of Africa and India, causing annual yield losses as high as 11 %, with losses for individual susceptible cultivars ranging from 20 to 90 %. The cassava mosaic disease agent is carried in cuttings of diseased plants and also transmitted by an insect vector, *bemisia spp.* Cassava bacterial blight was first recorded in Brazil in 1922, but not identified in Africa until 1972. The disease is devastating in Africa, especially in Nigeria and Zaire, where cassava production is the most extensive. It is disseminated by rain, insects and vegetative cuttings, as well as other forms of contact.

Considering the exigencies of traditional African agriculture, including the common use of infected propagating material, the development of disease resistant varieties appears to be the most effective means of controlling these two diseases. That is the direction the IITA programme has taken. Some breeding for resistance to cassava mosaic disease was done in Nigeria as early as 1955, and the institute's scientists have been able to capitalize on the development of a resistant clone, 58308, at that time. The result of an interspecific cross of cultivated cassava (*manihot esculenta*) and ceara rubber (*manihot glaziovii*), clone 58308, subsequently proved to be resistant to bacterial blight as well as cassava mosaic, making it doubly useful to the programme.

At IITA a recurrent selection system was established for continued improvement of populations for mosaic and bacterial blight resistance and other agronomic characters while maintaining large genetic variations. Resistance alone was improved in one cycle, taking 1-2 years, but it took 4-5 years to combine it with a high yield potential. Improved cassava cultivars developed at the institute over the past eight years have out-yielded local cultivars by a factor of 2 to 18 times in Nigeria, Sierra Leone, Liberia, Gabon, Zaire, Zanzibar, the Seychelles and India, especially under severe mosaic and bacterial blight exposure. Seeds from improved varieties have been supplied to many of these and other countries. Reselections from elite IITA lines have been used to breed locally adapted varieties.

The appearance and rapid spread of two exotic insects (the cassava mealybug, *phenacoccus manihoti,* and the green spider mite complex, *mononychellus spp.*) in African cassava fields during the past 10 years has constituted the second major production constraint. The cassava mealybug is native to Latin America where it is a minor pest, but in Africa, where it has no natural ene-

The disease resistant cassava developed at IITA

(*) Assistant director and leader, Root & Tuber Improvement Programme, at IITA, Ibadan, Nigeria.

mies, it is a serious problem, threatening cassava production in two-thirds of the cassava growing areas of the continent. Severe attacks cause heavy leaf loss and up to 60 % reductions in storage root yield.

The green spider mite is also indigenous to Latin America and was first reported in Uganda in 1972. It now occurs in almost all the cassava-growing countries in Africa. The insect pest causes damage mainly to top young leaves, resulting in dramatic leaf area reduction of up to 95 %. A storage root yield loss of more than 40 % has been reported. Conservative estimates place the annual loss from these pests in Africa at $ 1 800 million.

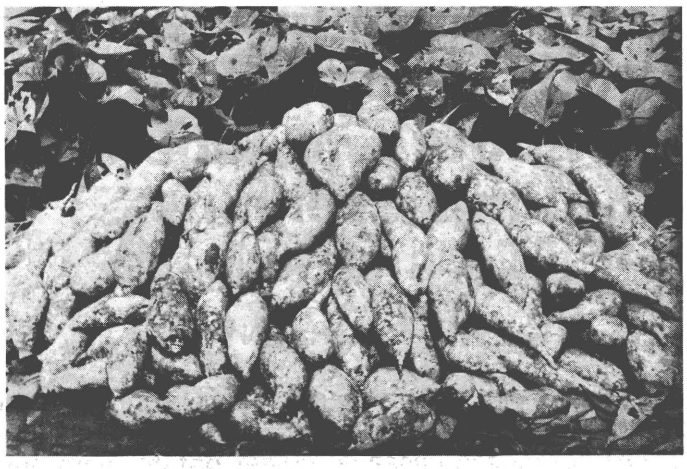
IITA is exploring two methods for controlling these insect pests—resistance breeding and biological control. Under the breeding programme, cassava clones resistant to both insects have been identified within the institute's germplasm collection. In one case, the factor responsible for resistance to the pests seems to be a hairiness on the surface of the leaves. Another mechanism of resistance appears to be present in some varieties with smooth leaves, but this mechanism has yet to be identified. Research directed toward verifying these resistance sources and incorporating them into elite varieties is continuing.

The biological control approach, that is, the identification and importation of the natural enemies of the pest from the area of the pest's origin, has concentrated initially on the cassava mealybug, as it is the more damaging pest. Intensive exploration work for *phenacoccus manihoti* and its natural enemies, conducted in the Americas over the past three years in cooperation with the Commonwealth Institute of Biological Control (CIBC) and the International Centre for Tropical Agriculture (CIAT), Colombia, has lead to the discovery of this pest on cassava in Paraguay, Bolivia and Brazil.

Several species of natural enemies have been collected. After quarantine in CIBC facilities in Trinidad and London, they were brought to Nigeria with the approval of Nigerian quarantine authorities and studied in detail. *Scymnus sp.,* a predator, and *apoanagyrus lopezi,* a parasitoid, have been mass multiplied and released experimentally in Nigeria, Zaire and the Republic of the Congo. Because it is usually the natural enemy complex (rather than a single predator or parasitoid) that ensures control, exploration for other natural enemy species continues. IITA is currently seeking funding for an expanded insectary at its Ibadan site and facilities for distributing the natural enemies throughout Africa. Training in biological control techniques for African counterparts is also a high priority activity.

Reducing the cyanide content of cassava

Cassava contains harmful amounts of cyanide both in the roots and leaves. This must be removed by processing (boiling, crushing, grating, fermenting, drying—according to local custom) before consumption. At IITA the breeding of cassava for low cyanide content has been carried on since 1973. The low HCN cassava families have been significantly improved through continuous recombinations and selection, but have remained at the frequency of about 25 % low cyanide seedlings within the population after five or six years of selection. No



Eckebil

Sweet potato
Tremendous capacity to produce under much dry matter per unit of land and time

further progress has been made, possibly because of: inaccurate screening (equipment to correlate leaf cyanide content with root content has not been perfected); genetics (close linkage between the genes controlling enzymes involved); or narrow genetic basis (as yet no cyanide-free cassava variety has been identified, anywhere in the world).

Sweet potato

The sweet potato, *ipomea batatas,* is an important energy food crop, having a tremendous capacity to produce much dry matter per unit of land and time. The major biological constraints to sweet potato production in the tropics are weevils and viruses. These constraints have seriously limited production, yet they received little attention before 1971, when IITA initiated sweet potato breeding work. The institute's objectives are to produce cultivars that are capable of high yield, resistant to economically important diseases and insects, and have good keeping qualities, good consumer acceptability, favourable processing characteristics, nutritional value and wide adaptation. For the past eight years, particular emphasis has been placed on breeding improved cultivars that are resistant to weevils and viruses.

The sweet potato virus disease complex consists of two components, one transmitted by aphids which appears to be fully latent in all genotypes of sweet potato, and one transmitted by the white fly. Damage occurs when both are present in the same plant. A core-graft transmission method has been used successfully for rapid screening for resistance to sweet potato virus complex. Factors of resistance to disease infection and to disease spread have been found among IITA's elite varieties, and some of these varieties show resistance to the weevil as well. Two varieties—TIS 2498 and TIS 2534 in particular—have consistently shown superior and stable performance in many trials in Nigeria over several years under widely different and generally poor environmental conditions. Yields without fertilizer averaged 14.2 t/ha for TIS 2498 and 13.8 t/ha for TIS 2534 in four months (compared with 6-14 t/ha in six to eight months for unimproved local varieties). Both these varieties are resistant to viruses. TIS 2534 performs well in dry areas and is resistant to the sweet potato weevil.

TIS 2498 is moderately resistant to the weevil. In addition, several of the advanced breeding lines have produced yields of 30-50 t/ha on small plots 140 days after planting.

The IITA population at this time contains 10 varieties with high resistance to the virus complex of which 4 are also resistant +0 the weevil. These improvements in resistance have been complemented by work on underground crop storage systems, which have proved effective against weevil attack.

Through the Institute's tissue culture laboratory, disease-free sweet potato and cassava clonal material has been distributed to over 20 countries in Africa.

Yam

The principal work in yam (*dioscorea spp.*) production has centered on improving genetic variability and propagation materials. Lack of knowledge about flowering and seed behaviour and physiology had previously hampered hybridization work. Most yam plants would not flower and seed set was usually low among those that did. Further, it was believed that the seeds were not viable. Early work at IITA revealed that the seeds have a dormancy period of 3-4 months, after which they will germinate. Scientists at IITA have subsequently succeeded in breeding many lines by hybridization in *D rotundata* (white yam) and *D alata* (water yam).

Throughout most yam producing areas the availability of planting material is a major limiting factor and the cost of this seed yam is rapidly becoming prohibitive. IITA research has succeeded in developing two new methods of preparing planting material—a rooted vine system, useful for rapidly multiplying elite clones that are free of nematodes and other soil pathogens for advanced testing in breeding programmes, and the Anambra minisett system, which enables growers to produce yam setts for sale to other farmers on a commercial basis. More than 25 000 seed-yams weighing over 200 grams per tuber can be produced from one hectare under good cultural management.

IITA is also working to develop yam varieties that will yield well without expensive, labour-intensive staking. Promising results have been achieved in producing the smaller seed-yams without staking, but staking is still necessary to produce high yields for market yams.

Cocoyam

Cocoyams (*xanthosoma spp.* and *colocasia spp.*) are traditionally vegetatively propagated using pieces of corm or whole cormels. Such vegetative propagation results in genetically uniform clones. Sexual propagation is necessary to produce genetically variable populations required for breeding improved cultivars.

Flowering in *xanthosoma* and *colocasia* is sporadic in West Africa and many cultivars do not flower naturally. IITA scientists have succeeded in promoting flowering through the use of giberellic acid. This technique greatly expands the opportunities for genetic improvement. Cocoyam *root rot blight complex* is the most significant disease constraint. Several cocoyam lines from seedling crosses between Nigerian and Caribbean collections have been grown at IITA and are being evaluated for resistance. Certain agronomic practices associated with heavy, poorly drained soils have also been found to affect the incidence of this disease.

Nematode control

Throughout the tropical and subtropical zones of Africa, plant-parasitic nematodes are of common occurrence. They are increasingly becoming a limiting factor to good crop growth as land is farmed more intensively. As an integral part of the root crops improvement programme, the IITA germplasm collection is being systematically screened for resistance to nematode pests.

The yams *D rotundata* and *D praehensilis* have been shown to be highly susceptible to root-knot nematodes, but good resistance has been found in *D dumetorum*. Resistance in yam is still being sought against the highly destructive yam nematode. Both nematodes badly disfigure tubers, thereby drastically reducing their market value. The yam nematode is also a member of a tuber-rot complex that is the cause of high storage losses.

The search for root-knot nematode resistance in cassava continues. Resistant genes are being looked for outside of the species in wild cassava. The nematodes attack the fine feeder roots leaving the storage root ("tuber") unaffected except for a reduction in size. Plant height is seldom reduced although the stem is weakened. Since the stem is used in planting the next crop, nematode infected plants provide inferior and less robust planting material.

Good resistance has been found in a number of sweet potato lines to two root-knot nematode species. This genetic material is actively being incorporated into the ongoing sweet potato breeding programme.

The cocoyam *xanthosoma sagittifolium* has shown good resistance to two species of root-knot nematode and the root-lesion, reniform and spiral nematodes. The specially developed techniques that induce flowering in the rarely flowering plants of this group will broaden the genetic base for incorporating resistance into breeding populations. o

Cereal production

Wheat and maize: CIMMYT's experience

by Clive JAMES (*)

Over the last decade, the highest cereal production growth rates in the developing world have been achieved in wheat and maize. Both crops have registered production gains of 4.8 and 3.7%, respectively, well ahead of population growth (1).

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(1) Extracts of an article sent to the "Courier".

Today, at least 35 million hectares of the developing countries' wheat area are planted with improved wheat varieties that carry CIMMYT-developed germplasm in their pedigrees. A conservative estimate of the yield contribution to increased developing countries production made by these improved varieties alone is seven million tonnes, worth US$ 1.200 million this year, and sufficient to provide 50 million people in the developing world with 65% of their annual caloric consumption.

While the impact of improved maize varieties is only beginning to show up in national production figures, it is estimated that five million hectares in the developing world are now planted to varieties and hybrids derived from CIMMYT germplasm. The yield contribution made by these improved maize materials alone is conservatively adding at least one million tonnes annually, worth $ 150 million at current maize prices.

Wheat

CIMMYT's wheat programme works on four crop species: bread wheat, durum wheat, barley and triticale. An endeavour is made to maintain the widest possible variation in the germplasm undergoing improvement so that material is available for all important production areas. In addition to the continuing work to develop improved germplasm for the more favoured areas, considerably more work is focused on the problems of the more difficult production environments.

CIMMYT's work on developing aluminum-tolerant wheat germplasm is an example of CIMMYT's increasing concern for the more marginal production environments. In cooperation with several Brazilian research institutes, a number of high-yielding, aluminum-tolerant lines with improved disease resistance have been developed. These varieties yield up to twice as much as currently available commercial varieties under acidic soil conditions characterized by high levels of soluble aluminum. Millions of hectares of land with acid soils, such as those found in Brazil, stand to benefit from this research.

Work on improving drought, cold and heat tolerance of CIMMYT's small grains germplasm is also showing considerable promise. Special nurseries have been established to distribute these materials for screening under the appropriate stress conditions.

Increasing attention in germplasm development is also being given to the problems associated with wheat production in the warmer tropical environments. This research principally involves developing greater resistance to certain diseases such as *helminthosporium* and *fusarium*, and to heat stresses, which affect the tillering and grain-filling ability of wheat in these warmer environments. Payoffs in this research area will result in expanded wheat production in the coolest season of the warmer tropics, thus helping non-traditional producers to meet their growing consumer demand for wheat, now requiring approximately US$ 6 000 m for imports per annum.

Another very important research thrust is to develop a broader range of earlier-maturing germplasm in wheat, triticale and barley. Such materials allow for greater cropping intensification and are also critical to those tropical belt areas, such as Bangladesh, where wheat cultivation is currently close to its biological limitations with only a 105-110 day growing season available.

More effort is being devoted to develop greater tolerance to saline soil conditions. Several approaches are being pursued within our conventional breeding programmes. Attempts are also under way to develop salinity tolerant wheat types through wide crosses, using some salinity tolerant wild grasses, such as *elymus* and *agropyron.*

CIMMYT's continuing work on triticale is motivated by two major considerations. One is the observed capacity of triticale to perform better than wheat under a number of environmental stress conditions. These include acid and sandy soils, cool highland temperatures, and heavy disease-stress situations. In such environments, triticales often outyield our normal wheat materials by as much as 100%. The second major factor is the greater total dry matter production of triticale vis-à-vis wheat. A further partitioning of this biomass to grain could push triticale to a higher genetic yield potential than wheat.

Work in barley is carried out in close collaboration with a sister international institute, ICARDA, headquartered in Syria. A range of high-yielding germplasm has been developed for many production environments. Some very early maturing materials show special promise for a number of farming conditions. The achievement of considerably higher and more stable disease resistance is now the major research thrust.

CIMMYT

Efforts are made at CIMMYT to develop broadly adapted materials, with high-yield potential, under various environmental conditions

A special germplasm development project to broaden the genetic base of both temperate and tropical germplasm is also showing good progress. The mixing and recombination of these two very diverse germplasm groups should increase the adaptation and yield dependability of maize throughout the world. It should also result in the development of tropical maize plants that carry the most desirable plant characteristics of temperate-zone maize genotypes.

In our nutritional quality programme, research efforts have resulted in the development of a number of high-yielding maize populations that look and taste like normal materials, yet have substantially higher protein quality than traditional maize. A number of superior hard endosperm experimental varieties have already been devel-

oped. Several years of multilocational testing has shown that they are ready for commercial use in certain areas of the world, both for food and feed. This diffusion will be further promoted and encouraged.

Economics programme

The focus of the Economics programme is on farm-level production issues related to the development and diffusion of improved maize and wheat technologies. Cooperation with national programme scientists engaged in on-farm research activities, emphasizing the important role that economists can play in assessing farmer circumstances, continues to expand. Given the serious food production situation in sub-Saharan Africa, increased attention is being given to the region. New research procedures are also being developed for generating, analyzing, and presenting farm-level information for use by those responsible for establishing national policies in agriculture. o C.J.

Rice: some advances

by Dr M.S. SWAMINATHAN (*)

Why should an abundance of natural resources co-exist with low farm productivity and consequent hunger? Can't we take steps to convert the natural blessings of the Third World—its basic life support systems of land, water, sunshine, flora and fauna—into wealth that is vital to its people? Why are many developing countries still giving low priority to agriculture? (1)

In response to this paradox, the Rockefeller and Ford Foundations, in cooperation with the Republic of the Philippines, established the International Rice Research Institute (IRRI) in 1960 on the campus of the University of thePhilippines at Los Baños. IRRI's objective is to increase the production of rice and of food from rice-based farming systems through applied agricultural science.

The choice of rice as the focus of an international research initiative and the choice of the Philippines as its location were appropriate: more than 95 % of the world's rice area is in the Third World, especially in the Far-East. For more than 1500 million low-income people in Asia, and hundreds of millions in Africa and Latin America, rice is the major source of calories and protein. Rice comprises a third of the area planted to cereals.

The International Rice Research Institute is a coordinating body for other international research organisations such as the International Rice Testing Programme, through which teams of capable, highly dedicated scientists and scholars all over the world work to improve and stabilize rice yields under diverse, and often harsh, growing conditions. More than 800 rice scientists in 75 countries on five continents work together in experiments and testing programmes. The strength of individual scientist and country may vary, but the collective strength of this worldwide rice research community is formidable.

In the past 20 years five major scientific advances have led to the doubling, and in some cases, the tripling of rice production in many countries where the high yield technology was spread among farmers with the help of appropriate packages of services and public policies.

These methods were:

— **the use of the modern semi-dwarf plant type that increases the efficiency of nutrient, water and sunshine use.**

The traditional varieties "lodge" or fall when soil fertility exceeds the capacity to produce more than two or three tonnes of rice per hectare. Grain rot in the water or are eaten by rats and photosynthesis ceases.

Modern semi-dwarf rice varieties yield five tonnes or more because their strong stems—inherited from Chinese parents—enable them to stand erect and convert nutrients, water, and sunshine into grain more efficiently. Many of the newer varieties carry built-in genetic resistance to a host of insects and diseases.

— **resort to the short growth duration coupled with insensitivity to length of day.** Teams of researchers selectively bred these traits into the modern rice varieties to make it possible for farmers to grow two or three crops where they previously grew only one crop, and to grow superior varieties at different latitudes.

— **cultivation of fl hybrid rice** which is grown mainly in China. Yields are about 30 % higher than those of ordinary semi-dwarfs.

— **improved irrigation and water management.** Better availability of water gives farmers yet another opportunity to grow two or more crops per year in the same field.

Good water management and early maturing varieties allow the planting and harvesting to be "staggered" throughout the year. The system spreads labour, cash inputs, and risk—and enhances both income and food production for the family. And the intensive production more fully exploits human inputs, water, sunshine, and soil.

— **the introduction of new farm management techniques** involving improved implements, mineral fertilizers and better methods of applying them, integrated procedures for pest control, and improved post-harvest technology.

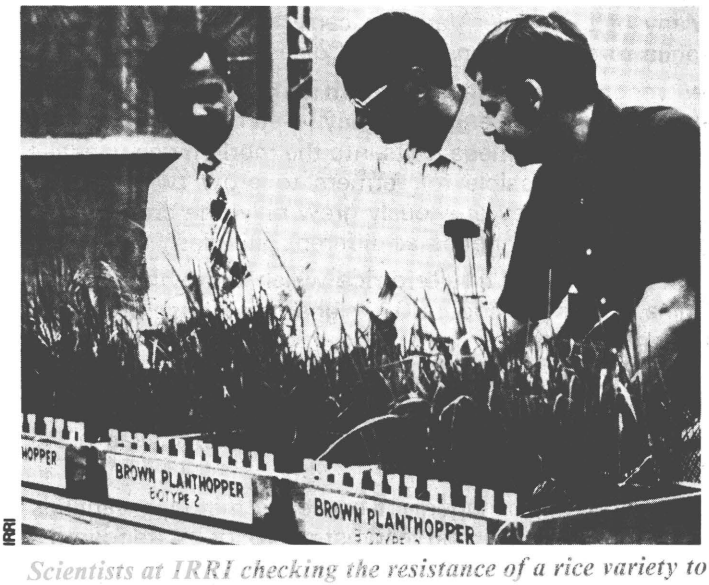
Asia has little unused land. Agricultural land is a shrinking resource as population multiplies and urbanization forces its way into the countryside. Asia's ratio of land to people of 0.21 hectare per person—is the lowest in the world. Future increases in agricultural production must come mainly from higher productivity and cropping intensity per unit of land, time, water, energy, and labour. The Food and Agriculture Organization estimates that rice production must increase by more than 3 % per year during the remainder of the 20th century to keep pace with population growth in the developing countries. This will require a continuous improvement in productivity and must be done without harming the long-term production potential of the soil. This challenge requires the intensification of research on all aspects of plant and soil care.

(*) Director-general, International Rice Research Institute (IRRI), Manila, Philippines.

(1) Extracts of an article sent to the Courier.

Proper attention to plant health not only prevents crop damage from the unholy triple alliance of insects, disease and weeds, but also reduces risk and uncertainty in agriculture. The IRRI develops varieties with multiple pest resistance. In its genetic resource centre, more than 65 000 varieties of rice are preserved for the use of today's rice scientists and farmers, and for generations to come.

But the collection probably includes little more than half of the world's genetic variability in rice. With the cooperation of the Chinese Academy of Agricultural Sciences and other national research systems, the IRRI proposes to develop a global strategy to collect the remaining genetic strains as rapidly as possible. Many irreplaceable rice strains—the fruits of thousands of years of natural and human selection—grow in endangered habitats and face the threat of extinction. Agricultural organizations everywhere must join forces to collect and preserve this invaluable germplasm for posterity.



IRRI

Scientists at IRRI checking the resistance of a rice variety to certain insects

But preserving the world's rice germplasm is not enough. More important, efforts must be made to discover the diverse genetic traits of these strains so that they can be put to work for the benefit of rice farmers everywhere.

Through the multidisciplinary Genetic Evaluation and Utilization (GEU) programme, IRRI and some other institutes are carefully testing these seed collections to see their inherited characteristics, their resistance to the diseases and insects that ravage farmers' crops and tie them to costly chemical protection, and their tolerance to adverse soil conditions.

The best rices from all nations are selected under adverse environments through the international rice testing programme. This global cooperation has resulted, for example, in the highly successful IR36 variety which is now grown on almost 11 million hectares in Asia. The IR36 is probably the most widely grown variety—of any food crop—the world has ever known. One moral stands clear from this in a world divided by discord and distrust: international cooperation is important for universal prosperity. o M.S.S.

Cereal post-harvest systems in the developing countries: problems and progress

by Peter MÜLLER (*)

To feed the growing world population is the main objective of agricultural development in the years ahead. Efforts are being made at national and international level to enchance agricultural productivity in developing countries by mobilizing their so far under-utilized potentials. This means striving for higher output by using high-yield varieties and improving production technology. However, these steps are not sufficient: the projected higher output must be preserved in terms of quantity and quality—a fact that has been emphasized only in the last two decades.

Demand in developing countries for improved harvesting and post-harvest systems is increasing, because:
— the introduction of new varieties and adoption of improved production methods lead to higher grain yields;
— the time-lag for harvesting and land preparation for the subsequent crop is reduced through more intensive multi-cropping;
— when more intensive multi-cropping is introduced, harvesting of one crop takes place during the rainy season. Farmers therefore face unknown problems of handling moist grain in a humid atmosphere.

Furthermore, it appears that sufficient resistance to storage pests and diseases has not always been taken into account in the breeding programmes for high-yield cereals.

In the light of these developments, problems and progress in some major areas of the grain post-harvest chain are discussed below.

Grain harvesting

The grain harvest at small- and medium-farmer's levels in the developing countries is still a very labour-intensive operation. It is a peak season of labour demand—the harvested crop has to be stacked in heaps prior to threshing in order to clear the field for the succeeding cropping season. The piles of unthreshed cereal crop are a major target for rodents and pests and, if wet, large and qualitative losses through mould and rotting can be expected.

Partial mechanization is being introduced in a number of countries. For example, the IRRI-reaper, based on a

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Chinese design, found a good response in many south-east Asian countries: in the Philippines and other countries of the region it is reported that acceptance of two-wheel tractors—as a possible basis for a reaper attachment—is increasing. A similar design is currently being tested in Egypt. Mini-combines are a technical solution normally beyond the reach of farmers, but could be introduced on a hire basis by entrepreneurs.

Displacement of rural labour by mechanization of cereal harvesting is, of course, a point of dispute. Fears have been expressed that landless labourers, particularly women, may lose an important source of livelihood. It has been argued, on the other hand, that the reduced harvesting time in intensive multiple cropping systems cannot effectively be utilized by the existing manual labour force. Thus, an important policy decision by governments is required, but each case has to be assessed according to the specific circumstances.

MULLER

The 5hp-reaper

Threshing

In many rural areas traditional methods of threshing can still be seen. For instance, animals used to trample on the unthreshed cereal spread out on a clean flat ground, or wooden sledges or steel disc rollers drawn by bullocks.

Nowadays, we in the industrialized countries, where combines are used extensively, can hardly assess the difficulties farmers in developing countries have, struggling, as our fore-fathers did, to harvest and thresh their grain and to cope with the trouble and costs involved in order to minimize post-harvest losses.

These farmers require a threshing machine which, in terms of size and investment costs, lies within their economic reach, is efficient in capacity and in separating grains from straw, in maintenance and in energy costs, can be manufactured and repaired locally, and gives a good and clean cereal product with little breakage.

Technical solutions are in hand in many countries, which fulfil most or all of these conditions. However, it appears that many of these threshing machines are still too big to be individually owned by small farmers. Multi-farm use on a cooperative basis or through entrepreneurs is already widely practised.

Cleaning and drying

Cleaning and drying of grains are necessary for preserving them and limiting losses. Technical solutions for grain cleaning, e.g. winnowers are available at various scales and technology. Simpler and yet fairly efficient winnowing equipment is also within reach of the smaller farmer. However, problems of drying are much more complex. Cereals can be safely stored if their moisture content is not more than 12 to 13%. Yet, the relative moisture content of the surrounding atmosphere has an influence on the conditions of the grain stock, which has to be carefully watched. Furthermore, the cereal species and the availability of energy for drying have to be taken into account.

Various types of grain driers exist, requiring fuel energy on a scale suitable for cooperatives. For instance, fossil-fuel, electricity, solar cells and harvest residues such as straws, husks and coconut shells are used.

Investment and energy costs are still prohibitive factors for a wide dissemination: scaling down and simplifying driers to bring them within reach of small farmers are, in many cases, uneconomical because of the short time of seasonal use. However, the demand for drying at the farmer's level is considerable.

Cereal quantities for either subsistence or local market do not pass through cooperative or official marketing channels where larger driers can be installed and run economically. It is a common knowledge that farmers accept using commercial drying facilities only if they are sure that their grain, which is the basis of their families' subsistence, will be returned to them.

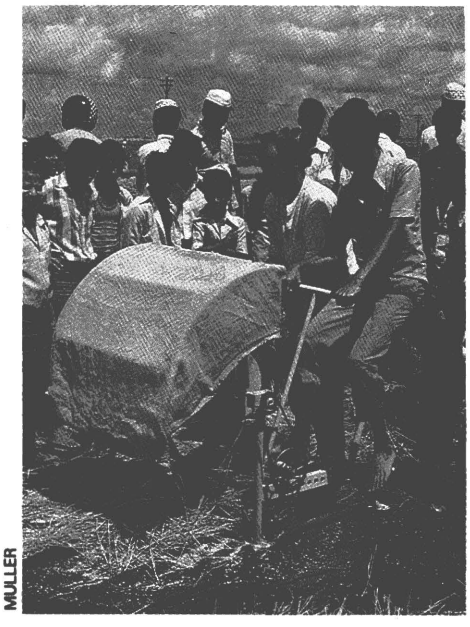
In the Philippines traders and millers procure rice mainly during the season when they can benefit most from sun drying. They tend to avoid investment in driers, thus leaving the problem of excessive moisture in rainfed paddy to the farmer. This problem is aggravated where farmers, applying more intensive production techniques, suddenly have to handle larger quantities of paddy harvested during the rainy season.

Storage

It is an essential prerequisite that grains entering the store are clean, dry, and not infested by pests and diseases. Minimizing grain losses during storage is a main objective of any post-harvest activity. This is most important where cereals have to be preserved for up to one year because harvest is once a year or where the risk of crop failure is high. In the case of reserve stocks the storage may even be for several years. With increasing surplus production for urban markets, grain storage has the function of levelling out seasonal price fluctuations.

A good storage structure has to fulfil the following conditions: adequate protection against external influences such as rain, wind, sun, dust, etc.; protection against birds, rodents and insects; no nooks and corners, which could be centres for infestation; no openings allowing permanent exposure to sun radiation; adequate and controllable ventilation facilities; allow easy pest control measures, and have fumigation facilities for the entire store room and for parts of it.

Efficient store management is equally important, as are preventive and hygienic measures, which are still the most significant single factors in minimizing losses of stored foodstuffs.



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The pedal driven thresher

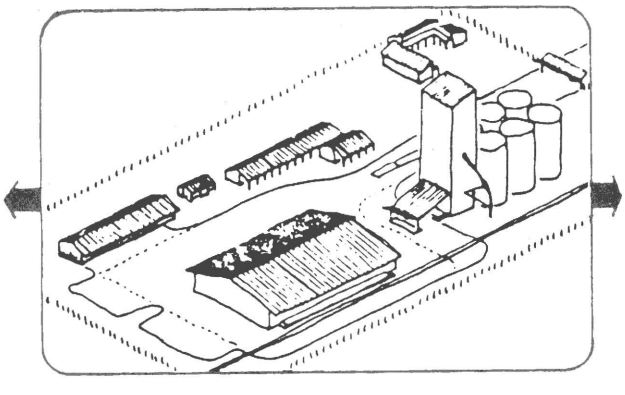
Traditional types

Traditional storage types and technical solutions for the individual farmer have evolved in accordance with natural and socio-economic environment and normally are well adapted. To some extent they broadly satisfy most of these conditions for good grain storage.

In fact, quantitative losses have proved to be low in stores used by farmers for their own subsistence grains. A study in Bangladesh and India has shown that total physical losses are below 7 % in traditional stores. Simple and cheap improvements are possible, but these are only necessary if cereal production is rising beyond the normal levels. The cement block silo with a capacity of 1.5 tonnes and the "ferrumbu" type have been accepted by farmers in West Africa. They are particularly suitable for semi-arid and arid zones, and the investment costs are within reach of small family holdings in the savannah. These closed containers allow fumigation.

Open storage system like the crib

Integrated storage system



is mainly used in warmer humid regions. The free flow of air avoids wastage of the crop which is stored unthreshed. An improved version of the crib has been developed. It can be built at low cost from locally available materials.

Another improvement necessary for both open and closed storage systems is better protection against attack by rodents. Introducing innovation into the traditional grain storage system is a long-drawn process. Systematic extension efforts would be necessary to have an impact on the target of a large number of farmers.

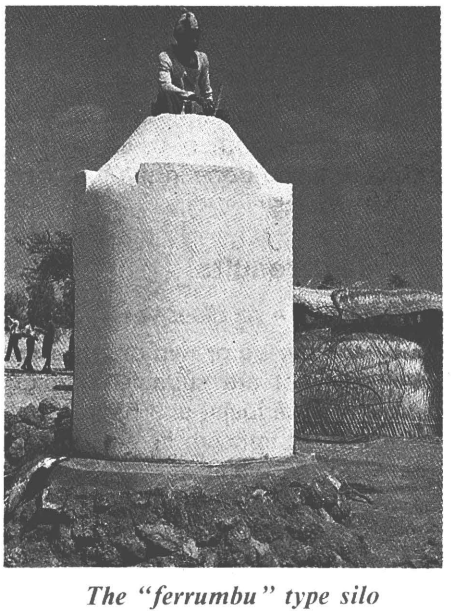
For example: a new storage pest, the Larger Grain Borer, *prostephanus truncatus,* formerly known only in central America, appeared a couple of years ago in eastern Africa. The pest mainly attacks maize through the cobs. Controlling this pest will require a change in farmers' storing methods which involves mainly keeping maize on the cob at home or in thatched houses.

At village or cooperative level

Grain storage at village or cooperative level mainly serves as collection points for the marketable cereals. They have a buffer function and farmers can retain some control of "their" grain until they are convinced of having sufficient supplies in stock to reach the next harvest. This type of store, mainly built as a shed, is promoted in many countries as a means of organizing marketing, improving storage and controlling pests. However, large losses occur since those in charge are most often not acquainted with or properly trained in handling cereals in such conditions. They lack equipment and pesticides to control pests, and many of the above listed prerequisites for a good storage are not met. Fulfilling these conditions does not necessarily increase the establishing costs of the various types of local stores.

In Togo a model shed-store with a capacity of 50 tonnes has been developed. It is built solely with sand, cement and timber and is suitable for a village or a cooperative. Experimental results with regard to storage quality and gas treatment have been encouraging.

At this level, grain is normally stored in bags. In larger grain silos the choice between bag or bulk handling, or for a mix of both systems is a crucial decision. In general the pros and cons of bag and bulk storage are as follows:



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The "ferrumbu" type silo

Bags:
— flexibility of storage
— low capital costs
— technical limitations to mechanization
— high operating cost per tonne
— high loss potential through rodents

Bulk:
— inflexibility of storage
— high capital costs
— highly suitable for mechanization
— low operating costs per tonne
— low rodent losses.

The choice of storage system depends on a country's transportation infrastructure. Large grain silos are necessary to ensure the cereals supply of the growing urban populations in the developing countries, to create buffer or reserve stocks, especially in regions where the supply situation is notoriously precarious, and to facilitate cereals import or export.

In many developing countries high storage losses are estimated to occur in intermediate stores where damages occur: mould, rotting, insects and rodents. These losses are due, mainly, to lack of know-how in grain silo management and also to lack of incentives, for instance, in establishing quality standards and a relative pricing policy.

The lack of know-how can be overcome by extensive training schemes which are, in fact, part of many technical cooperation programmes. The establishment of quality standards and a relative pricing policy require consistent government decisions.

Integrated systems

Grain post-harvest support programmes centering on improved storage must take account of the concept of hierarchical storage system: collection points and intermediate stores which depend on a main store, the size of of each unit based on the production density of the region concerned. Collection points are located suitably near the producers, the intermediate and main stores close to consumption or processing centres and export or import points. The functions of each of these storage units differ not only in hierarchy, but also from season to season. Their storage capacity, method of storage conveying, cleaning and drying equipment are determined in accordance with these functions.

Furthermore, these hierarchical storage types must fit into the network of integrated service functions necessary for agricultural development. Experience has shown that post-harvest support or development programmes have a higher chance of success and of acceptance by groups, such as farmers and traders, if they are included in an integrated approach to agricultural development. Apart from adequate storage facilities, such an integrated programme must comprise the following activities:
— purchase and marketing of produce
— processing of agricultural produce
— distribution and sales of agricultural inputs
— supply of agricultural tools, machinery and implements
— maintenance, repair and spare part services
— provision of credit and extension services.

This means that both the planning and implementation of grain post-harvest programmes must be considered as an integral part of rural development, taking into account not only technological aspects, but also the socio-economic and organizational conditions of the regions and countries concerned. o P.M.

Market gardening in the tropics

by C. M. MESSIAEN (*)

In the tropics, it is difficult to say just what constitutes the growing of food crops and just what constitutes market gardening in the European sense of the term. However, there are two main methods.

Traditional mixed farming

(Creole gardens, as they say in the Caribbean), growing, according to climate, either cereals or root vegetables for calories plus seed vegetables for vegetable protein and hardy vegetables (gourds, solanaceous plants, leaf vegetables, etc.).

In many countries, these traditional methods, where productivity depends mainly on biological mechanisms and no mineral fertilizer or pesticides are used, are now being run down or disappearing altogether. There are two reasons for this. Either demographic expansion and a shortage of arable land are reducing the efficiency of the above biological mechanisms (particularly by eliminating fallow periods) or, in the more developed countries, young people are shying away from an activity involving intense manual labour and only modest returns.

Attempts at transferring market gardening systems from the temperate zones to the tropics

In this case, the work of the market gardener who is ready and willing to reap the benefit of the equipment and methods of modern agriculture (fertilizer, pesticide, mechanization, catalogues of improved varieties, etc.) tends to run into problems, either at the outset or in the longer term.

Immediate problems come up when the varieties used are ill-adapted to the climate and, above all, when the plants are from temperate zones or from mountain areas in the tropics. They may show unexpected susceptibility to diseases, or to pests that are the same as in the temperate zones but more aggressive, or to specifically tropical parasites.

The long-term problems may be grouped under the heading of "soil fatigue", a term which covers a whole range of factors covering both agricultural and parasitic aspects. For example:
— in expanding clay soil (1), a crust may be formed because the land has been worked with the wrong tools;
— in laterite soil (1), there may be excessive acidification and exaggeration of aluminium and manganese toxicity, following the use of acidifying fertilizers, and organic deterioration;
— diseases attacking plants from the soil (specific bacterial withering in solanaceous plants) may gradually get worse;
— polyphagous parasites attacking almost all plants (threadworms and *sclerotium rolfii*, for example) may accumulate in the soil.

These problems often lead this kind of market gardener to reinstate the traditional fallow period, which is absurd if his plots are irrigated.

So the development of stable farms providing a decent living for a family and one or two farm workers, from 1 or 2 hectares of land, along the lines of the irrigated holdings in Mediterranean Europe, is by no means assured in the tropics as yet.

Research therefore has to apply itself to solving these problems. But experience has shown that research will only be partly successful unless it tries out the transferred techniques—whether they concern varieties, plant health or fertilization—on the spot.

In tropical conditions, it must start by associating a thorough study of the causes of the deterioration or failure of any given system to the biological mechanisms that made for the stability of the golden age of traditional systems. Then, in full knowledge of the facts, it can embark upon the selection of suitable varieties and run long-term experiments to devise systems that are better from the point of view of both stability and performance.

In doing so, of course, it will also be able to solve the problems, technically at least, of particular crops aimed at winter exports to the developed world.

The spectacular results achieved so far particularly concern the immediate problems already mentioned. They have been obtained either in one or two rare market gardening research centres and stations in the tropics, or thanks to fortunate climatic coincidences. The summers in regions more to the north of the east coast of the great continents (Florida, Louisiana, southern Japan and Korea), for example, have conditions approaching those of the humid tropics and the varieties selected in these conditions and the recommended methods will thus be able to be used fairly easily. European ideas and the highly elaborate methods of the Dutch market gardener will be much more difficult to transfer to the tropics; the Mediterranean achievements will only be of use in winter in the Sahel, if there is irrigation.

If Europe wants to make a worthwhile contribution to improving tropical market gardening, then it will have to associate itself with the work being done in the research stations and centres in the tropics.

Some recent results

Climatic adaptation and resistance to disease

- White-heart cabbages can now be grown on plains in the tropics, using F_1 hybrids that are suitable for high temperatures and resistant to fusariosis, and have a leaf bacteriosis that is particularly aggressive in hot, humid conditions. These hybrids are the result of work carried out in universities and seed firms in the USA and Japan.
- Cucumbers are physiologically suited to tropical conditions but devastated by *oidium* and mildew. However,

(*) Head of the INRA plant improvement station, Domaine Duclos, 97170, Petit Bourg, Guadeloupe.

(1) These two extreme types of soil occur in the tropics, the former in dry and the latter in humid conditions. The mechanical difficulties are worse in the former case, while, in laterite soil, low fertility, acidity and mineral toxicity occur.

they can be grown lucratively now that hybrids and varieties from the USA are available (European greenhouse varieties are totally unsuitable).

- Lettuces can be grown successfully if varieties suited to summers in the Mediterranean region or Florida are used.

- Tomato-growing is a difficult proposition if European field or greenhouse varieties are used, but it is possible in the cool season with varieties obtained in Florida and Louisiana, as these are resistant to *fusariosis* and the leaf diseases (*stemphiliosis* and *cladosporiosis*) that are particularly common in the tropics. However, success is still a problem during the rainy season or when the soil is infected with bacteria that cause withering. An attempt is being made to solve these problems in the University of North Carolina (bacteria-induced withering), the University of Louisiana (high temperatures), the INRA plant improvement station in the Caribbean and the AVRDC in Taiwan. The Caribbean variety obtained by Mr Guy Anaïs on Guadeloupe, an initial success in this field, is the result of a combination of two selection programmes—one on tolerance to high temperatures and the other on resistance to bacteria-induced withering. It is spreading rapidly across the Caribbean and has proved its worth in Brazil and Madagascar. The French firm Tézier is dealing with the mass production of this plant. It is worth noting that it was a station sited in authentically tropical conditions that achieved success the fastest.

- Africans, traditionally, are producers of onions in a number of varieties, including the improved *violet de galmi* selected by IRAT in Niger.

The traditional way of using these onions—fermentation and then sun-drying of the paste—was no motivation, even empirically, for selection with a view to storing. Similarly, the low-latitude onions, *granex* for example, from the American catalogues can be grown in the tropics but keep badly. INRA stations in the Caribbean and at Versailles have collaborated to produce a cross between *violet de galmi* and a yellow Dutch onion which keeps well. This has yielded a yellow tropical onion which is easy to keep. All that has to be done now is mass produce the variety.

An extension of this programme will lead to tropical shallots that are of a better calibre than traditional varieties.

- The AVRDC, an internationally-financed centre in Taiwan, has begun to produce varieties and hybrids (F_1) of Chinese cabbage which is resistant to heat and to bacteria-induced rotting of the collar. This vegetable, which is very popular in many tropical countries, has hitherto been no better adapted to tropical conditions than common varieties of white-heart cabbage.

- Achievements in the near future could include F_1 hybrids and varieties of courgettes (tolerance to heavy rainfall, resistance to *oidium*) and a variety of beans (string beans, red beans to be shelled, etc.) from INRA in the Caribbean. It is to be hoped that private Asian firms will make progress with adapting carrots, cauliflowers, radishes and so on to the climate of the tropics.

- Considerable progress has been or is being made with plants which are less typical examples of market gardening but which can, nevertheless, fetch high prices on markets in the tropics. This includes the production of white yam (*dioscorea alata*) clones that are resistant to *anthracnosis* by INRA, Guadeloupe; research programmes on sweet potatoes (protein content, hardiness, culinary properties) by the AVRDC in Puerto Rico, selection of pigeon peas at the University of the West Indies in Trinidad; selection of niébé at the IITA, an international centre in Nigeria; and more.

Plant health and herbicides

Plant health protection in market gardening is often a question of luck.

The active materials are synthesized and marketed by firms in the USA, Europe and Japan. The techniques of application are perfected, as a matter of priority, for industrial crops in both temperate zones (vines, fruit trees, beetroot and grain) and the tropics (banana palms, cotton). Considerable results have been obtained in the market gardening sector from derived commercial products. For example:

- Coprosan super D (a viticultural product), alternated with ceretal (intended for cereals), can provide tomato plants with protection against leaf diseases other than stemphyliosis or cladosporiasis.

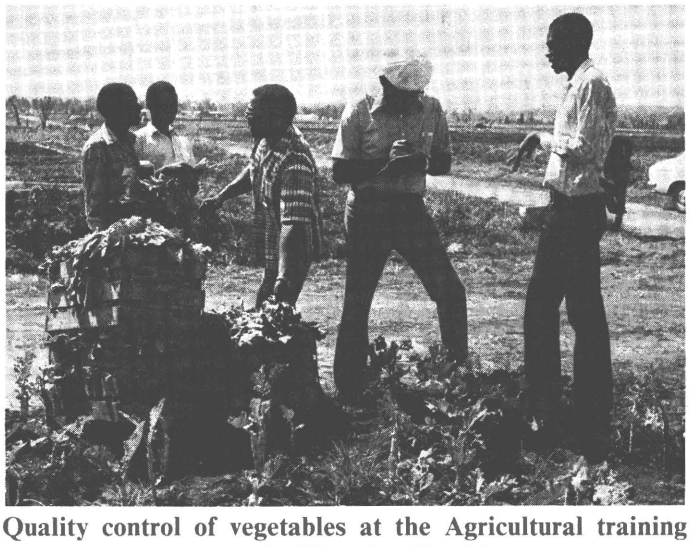
- A synthetic pyrethrin, originally intended for cotton and sold under the name of Decis, solves the problem of tropical caterpillars on cabbages and gourds far more effectively than before and with far less danger to the consumer, until such time as the biological insecticide derived from *bacillus thuringiensis* is available at accessible prices in the tropics.

- The contact weed-killers (Diquat and Paraquat) have been adopted spontaneously by the Caribbean market gardeners, who know how to use them. The IITA in Ibadan is successfully adapting these products for use in improved mixed food farming systems.

- Glyphosate has proved successful in controlling *cyperus*, the weed which tropical market gardeners find it difficult to keep back but are unable to check by traditional methods.

Preservation and improvement of the soil

This is where progress is hardest. It is much easier to spread a new variety of a new pesticide—farmers some-



FAO

Quality control of vegetables at the Agricultural training centre in Chapula, Zambia.

times need to be held back in their enthusiasm—than to get people to adopt or maintain farming methods that are essential in the long term but not obviously useful to start with.

An example of improvements to the laterite soils that are so common in the humid tropics is Guadeloupe, where there is a sugar industry that generates waste (bagasse and scum) and large urban centres. Mr Y. Clairon has produced a list of sources of organic materials and such combinations of them as can be used to make compost, to replace the classic farm manure which is not readily available and is hygienically suspect in the tropics. Bagasse + nitrogen and phosphate, bagasse + scum, bagasse + sewage sludge, sieved household rubbish, cut lawn-grass, etc., can be made to ferment. A green sorghum fertilizer has also been shown to be useful.

A combination of these organic improvements and calcium carbonate (crushed chalk rock) and insoluble phosphates (slag type) can be recommended as a way of making laterite soil as fertile as possible for market garden crops.

With expanding clay soils, it is water management that poses the problems. The optimum doses of water for this type of soil have had to be determined and tests on tomatoes and peppers have been run by Mr C. Valancogne and his team.

However, with the possible exception of green-sorghum fertilizer, little is still known about the interaction of fertilizer improvements and the parasitic phenomena which wear the soil out.

Lastly, the resistance of the varieties used to given factors of soil fatigues may help solve this problem. The use of worm-resistant varieties of tomato, stimulating the hatching out of dormant larvae but preventing their later development, brings down the level of contamination of the soil.

It would be presumptuous of any specialist to believe that any of the three following ideas is adequate to solve the problem of soil fatigue:
— physical or chemical methods of disinfection applied to seeds and seedlings in the nursery;
— the use of resistant or tolerant varieties;
— better management of farming methods.

However, it is very much to be hoped that a combination of the three will lead to the creation of market gardening concerns that are both permanent and stable.

Research priorities in the coming years

In the coming years, it is to be hoped that within the framework of increased national financing, or more extensive EEC-ACP financing, the schemes run by French and French-speaking INRA stations in the Caribbean, by IRAT in a number of countries, by the English and Dutch tropical institutes and by the national research bodies in the tropics will converge with those of the internationally-financed AVRDC, IITA and CIAT centres to pursue the variety selection and plant health schemes that have already proved their worth.

It would also be desirable for these research schemes to meet the needs of development, by producing tropical catalogues of market gardening products and plant health guides for tropical market gardeners similar to those available to people in the temperate zones.

But the major contribution we must hope for in the field of research is the introduction of multi-annual experiments involving plant improvements, plant health and agricultural sciences, with a view to defining the conditions for permanent tropical market gardening.

There are two interesting possibilities:
— intensive market gardening, with a target of around 80 tonnes of fresh vegetables per hectare per annum, under irrigation, perhaps with properly used mineral fertilizers and pesticides but relying mainly on biological methods to tackle the problem of soil fatigue in the long term (resistant varieties, organic additions, sound water management, etc.).
— improved Creole gardens with the more modest target of 20 t root vegetables (or their cereal equivalent) plus 10 t of other vegetables and pulses per ha p.a., capitalizing on both the lessons learned from traditional systems (associated crops, biological means of maintaining fertility, biological fixing of nitrogen) and varieties selected with a view to this type of utilization.

The time for reflexion in this field is past. What is needed now is action. o C.M.M.

Cash crops

Oil palms and coconut palms

by M. OLLAGNIER (*)

In 1962-82, world production of palm oil increased from 1.1 million to 5 million tonnes, of palm nut oil from 450 000 to 645 000 tonnes and of coconut oil from 1 965 000 to 3 140 000 tonnes.

Oil palms have thus been developed much faster than coconut palms and this difference is due to the special features of each crop. The oil palm industry was started at the beginning of the century by European financial companies, interested in productivity and efficiency, which invested in the most favourable ecological zones (in Malaysia and Indonesia) and set up the relevant research centres.

Since 1960, genetic, agronomical and technological progress has made palm oil a far more profitable proposition than rubber; new palm plantations have been developed on a large scale and old plantations converted, giving Malaysia and Indonesia surplus of more than 3 million tonnes for export to India, the Middle East, Pakistan and Japan, all new customers to add to the traditional importers—Germany, the United Kingdom, the Netherlands and the USA.

In West Africa, the industry underwent major developments when 100 000 hectares in the Ivory Coast were planted with palms, beginning in 1960. The method used here was similar to the Nucleus Estate Smallholders (NES) projects in the Far East, with a dozen or so agro-industrial complexes covering 51 000 ha and dealing with the produce from satellite village plantations run by 9000 planters.

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The average industrial crop yield of 2-3 t per ha is very much affected by the rainfall, which varies considerably from one year and from one project to another.

Yield on the village plantations is 60-75 % that of the agro-industrial complexes, depending on the age of the palms (a harvesting problem).

In Cameroon, about 60 000 ha have been brought under palms by two national companies, the CDC in the west and Socapalm in the east.

In Benin, 25 000 ha of plantations—cooperative projects grouped in two main regions (Hinvi and Agonvy)—only produce 1-1.5 t of oil per ha because the climate (rainfall) is only marginally suitable.

The main idea behind all these projects is to produce table oil for rapidly expanding populations. They have been financed primarily by the EDF, the IBRD, the CCCE (Paris) and the national budgets.

Conditions of production are such that there is only a small profit on exports and a sales price of around $ 500 per tonne on the local market is required to ensure the plantations run at a profit.

A number of small-scale projects have also been run in various countries of western, central and eastern Africa and in Madagascar. The aim throughout has been to reduce the shortage of fats prevalent in all these countries.

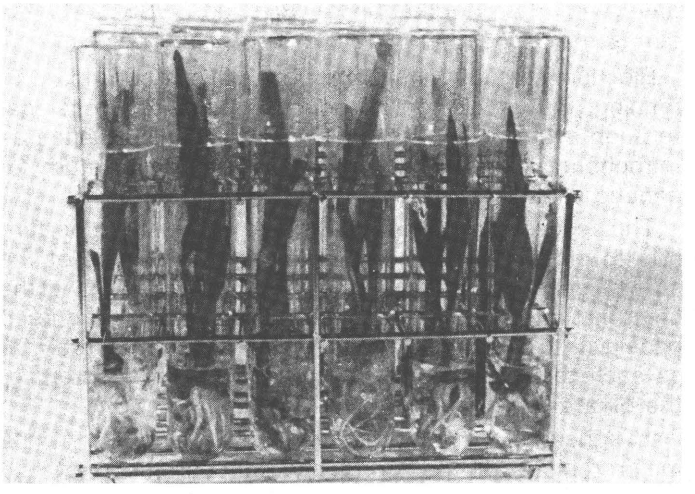
Progress with research

Selection has gone through a number of stages; the spontaneous palm (99 % Dura palms with hard shells) has been abandoned in favour of the selected palm (100 % Tenera palms with thin shells) and yield has gone up accordingly from 500-600 kg of oil per ha to a potential 6-7 tonnes.

During the 1920-40 period local selection was not really very effective, yields revealing characteristics that could not easily be passed on. In 1940, the Yangambi station (in Zaire) discovered the mechanism whereby the thickness of the shell was passed on and this is behind the popularization of the Dura × Pisifera cross. In 1947-54, there was a vast international exchange of material between various countries of Africa and Asia, designed and organized by the IHRO. This proved the superiority of the crosses between Far Eastern Deli palms and African palms over Deli × Deli and African × African. An almost 50 % improvement (4.5-5.5 t oil per ha) was achieved at this stage. In 1957, the IHRO began adapting a reciprocal, recurrent selection process to the palm. Of 750 crosses tested, 15 were retained for seed production and this brought about a further improvement in productivity of 20-25 % in the case of the seed in general use at the moment (6-7 t palm oil per ha). The second cycle of recurrent selection, which began in 1970, involved studying 840 crosses in Africa and Indonesia. The principle is a simple one. Some of the parent palms used for reproduction of the 15 crosses selected previously give better-performance hybrids than others (greater ability to combine) and an attempt will be made to use only these better palms.

This stage makes a further improvement, of 10 % this time, seem likely.

Improvements have also been made with growth.



IRHO

Shoots of oil palm obtained through the "in vitro" multiplication method

Whereas growth used to be reduced sometimes at a height of less than 75 cm p.a., the figure is now 50 cm p.a. and so the period of exploitation can be extended by three or four years.

The fluidity of the oil has been improved by a 10 % increase in the rate of unsaturated fatty acids.

Tissue culture yields clones with a potential of more than 10 t oil per ha

But before the end of this decade, the productivity of the oil palm will have made a further leap forward thanks to a new *in vitro* vegetative multiplication process.

This is a joint ORSTOM-IRHO scheme started by the ORSTOM researchers, Rabechault and Martin, in the Bondy laboratories in France. The first plantlets were available in 1976. The process has been perfected and a clone production unit has been operating on the Lâ Mê oil palm station in the Ivory Coast since 1981. The clones are being tested for conformity, growth and production on the station and the best will be mass-produced.

Small fragments of leaf tissue (explants) are taken from choice palms, disinfected and put in a growing medium containing, essentially, minerals, vegetable hormones and vitamins.

In a few weeks, calluses, non-organized tissue in which there is very little cell differentiation, appear. Subculture and a transfer to a cool place can yield a large number of culture masses from one explant.

Altering the hormone content of the culture medium, in particular by reducing the 2.4.D., will bring about a reorganization of the tissues and produce embryoids which are very similar to the embryos obtained from palm seeds—with the major difference that they will be genotypically identical to the tree from which the original explant was taken.

A cross between two parents producing, say, 30 t bunches per ha (220 kg per palm on average) may contain individuals producing 300 kg. Those are the ones, it is hoped, that can be reproduced on an identical basis, meaning that a further increase in yield, to 10-11 t per ha in ideal ecological conditions, can be hoped for.

In Malaysia, the Federal Land Development Authority (FELDA) has begun to establish *in vitro* shoot production

units with the cooperation of IRHO and ORSTOM. The aim is the production of two million plants per annum.

Biochemical and physiological disciplines contribute to refining the levels of introduction and of crossings, through a better understanding of mechanisms such as mitochondial and enzymatic activities and the study of genetic variability of ecotypes.

The research stations have an enormously important role to play in the preservation and maintenance of the sort of genetic variability that can match changes in the environment (ecology, parasites, disease, etc.) and keep pace with trends in the consumer's requirements as far as such things as the fatty acid and vitamin content of the oil are concerned.

In agriculture, the applied research being run in the major regions of the world and the perfection of leaf diagnosis make it possible to offer different types of manure for different types of planter, i.e. for companies seeking maximum production (palm oil fetches $800 on the national market in Colombia), those seeking maximum profits and the small planter who can only spend a small amount of money on this product. Most of the plantations get an adequate dose of fertilizer every year.

Research continues because fertility alters with the age of the plantation. In the second and third generation, the needs are different from those just after the primary forest has been cleared; soil structures alter and additional growing methods are called for (e.g. subsoiling to restrict compaction due to exploitation).

A need for research is appearing in the field of nitrogen fixing by associated leguminous plants, the study of mycorrhiza systems facilitating phosphorous feeding and the study of chlorine (this has proved indispensable and tends to be deficient in the interior of Africa and South America) deposits in the atmosphere, at a time when the cost of fertilizer is a major component of the cost price.

The problems of improving resistance to drought have been investigated both from the genetic angle and from the point of view of farming techniques (density and irrigation).

In Benin, for example, irrigation by the Bas-Rhône-Languedoc method, which operates over 700 ha, has enabled yields of 18 t of bunches of fruit to be produced, as compared to a mere 7 t without irrigation and only 75 mm of water during the dry season.

The most difficult plant health problems have cropped up in Latin America.

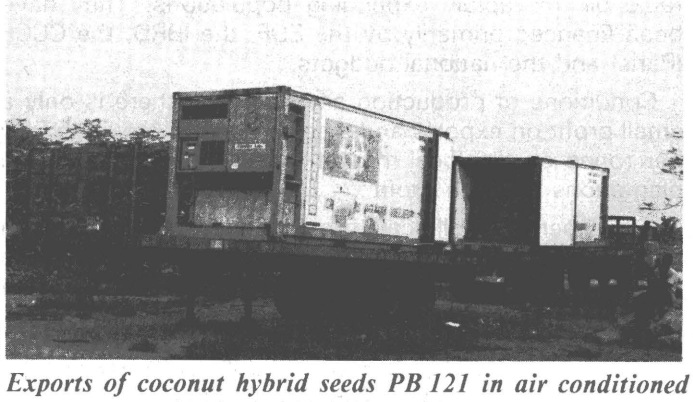
The oil palm, which is of Africain origin, is very susceptible to South American parasites which, in many cases, transmit diseases with pathogenic agents which are only gradually being discovered. Flagellate protozoa and fungus nematodes have recently been traced in the IRHO-GERDAT laboratory in Montpellier. Viruses will also probably be isolated.

In West Africa, the main damage, an endemic problem, is wrought by miners of a small beetle, *coelaenomenodera elaeidis*. There are a number of ways of dealing with this—injection of products, spraying by plane and helicopter, etc. Biomathematical investigation is used to calculate the optimum dates and numbers of treatments.

Introduction of an African pollinating agent in Malaysia yields spectacular results

Research still has some surprises in store.

An examination of the reasons for poor results at the first stage of fruit formation in Papua New Guinea and Sabah (Borneo) has shown that there was practically no pollinating fauna present. A more thorough study of the bunches of fruit (i.e. the percentage of normal and the percentage of parthenocarpic fruit) in Cameroon and in Malaysia and Sabah showed that there was every point in introducing one of the five or six types of small weevils which are the main pollinating agents in West Africa, where the percentage of fertilized flowers is up at the 70-80 % mark (as against 50 % in Malaysia).



IRHO

Exports of coconut hybrid seeds PB 121 in air conditioned containers

The first weevils were released in the southern part of the peninsula in April 1981 and a year later it was clear that all the flowers on the the palms in Malaysia had been colonized by *elaedobius kamerunicus*. The effect on palm nut production was spectacular, as production increased by 54 % over the previous year and the improvement for palm oil was 24 %. The 30 % difference is no doubt due to the introduction of the weevils. The indirect effects (a reduction in the number of thrips, the local pollinating agent, and an increase in the three rats which eat *elaeidobius kamerunicus* larvae) do not appear to have been very bad.

The increase in palm nut production probably had a stifling effect on the market in lauric acid products in the second half of 1982.

The palm oil industry is thriving today because of the possibility of cheap labour.

Biotechnological research is also being run with a view to the transformation of palm oil or its fractionation into proteins. *Candida lypolitica,* a yeast, ensures a satisfactory yield in the laboratory.

It is hoped to move on to the pilot stage soon. The oil palm can then become a provider of protein in the same way as soya and coconut palms.

Coconut palms

The coconut palm has for years been the most commonly cultivated plant in the world. Its ecological demands are less stringent than those of the oil palm, as far as temperature and water are concerned, and it is found between the latitudes of Acapulco (Mexico) and Rio de Janeiro (Brazil).

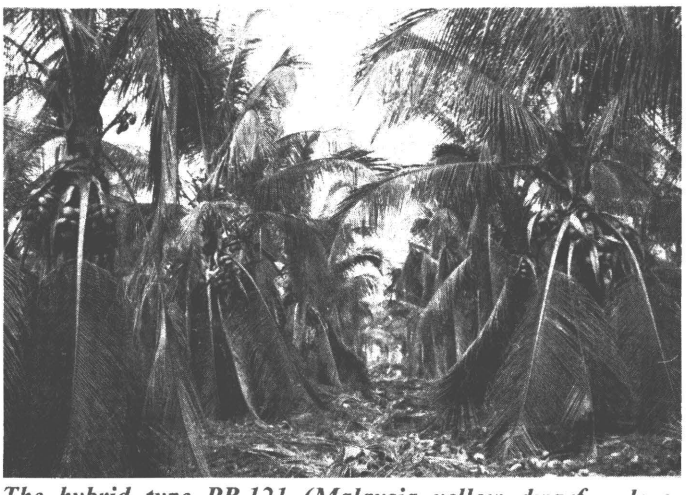
Unlike the oil palm, for which it is difficult to plan plantations of less than 500 ha (because the bunches of fruit have to be treated in installations of a certain size), the coconut palm is useful at domestic level and housewives in the Philippines and Indonesia use it in everyday cooking. Most of the world's coconut palms are on small village-type plantations, generally with other food or cash crops in between or sheep and cattle grazing beneath when the trees are high enough.

Agricultural research into coconut palms was undertaken in the Far East about 50 years ago, but few practical results emerged from it. Selection from local populations in Sri Lanka, India and the Philippines produced no increase in copra yields, as tends to be the case with allogamous plants. In Indonesia, for example, the people in charge of development had no reason to encourage the planters to regenerate old coconut plantations.

The IRHO began to concentrate on creating and popularizing hybrids, particularly PB 121, which is a cross between the Yellow Dwarf of Malaysia and the large West African coconut palm, in 1960. This hybrid, on which comparative studies of the various ecological conditions in West Africa (Ivory Coast, Cameroon and Togo), East Africa (Tanzania, Madagascar, Comoros, etc.), the Far East (Indonesia, Malaysia, the Philippines) and Latin America have been run, has a potential yield 50-100 % higher than that of local coconut palms and valuable characteristics of adaptation to different ecologies (high drought tolerance, for example) when the people in charge of development are often tempted to extend growing to climatically marginal areas. This hybrid tends to start producing at about three years old, produces 2 t of copra at the age of four or five and 5 t when adult. The rate of copra per nut is on the poor side (200 g per nut, as against 200 g for the Great West African, 250 g for the great palms from Sri Lanka, India and Indonesia and 300 g for certain great palms in the Philippines, Malaysia, Thailand and Rennell).

However, this is no major handicap in the preparation of copra, as it is easier to empty this smaller type of nut.

More recently, the IRHO has been trying to improve the most promising hybrids in the light of the characteristics of the parent plants (individual aptitude for combination).



IRHO

The hybrid type PB 121 (Malaysia yellow dwarf × large West African), which is resistant to drought, in a plantation in the Ivory Coast

Particular attention is being paid to the amount of copra per nut, the most heritable property, and the amount of copra per tree. The potential gain of this second cycle of selection is around 30 % copra per ha.

These improvements go hand in hand with the need to diversify the plant life by setting up collections of a very large number of geographical strains from all over the world for use as genetic bases for the production of new types of hybrid.

This work is being carried out in several countries, but particular mention should be made of the Ivory Coast, which, together with the IRHO, is running major research currently of benefit to the whole of the international community.

Because of the poor rate of reproduction of the coconut palm and the size of the seed (1 seed = 1 nut = 1 kg), and the absence of any period of dormancy, the countries which grow them are forced to have seed beds. Huges schemes are being run in the Ivory Coast and the Far East (the Philippines, Indonesia, Malaysia and Thailand) on mass production to meet the demands of the replantation programmes.

Major efforts for even minimal fertilization

Although this hybrid needs no more fertilizer per tonne of copra produced than the old local varieties, it certainly needs a minimum of fertilization if its potential is to be reached. Today, less than 1/1000 of the areas planted with local varieties of coconut palms are fertilized and the change from this situation to the ideal one, where plantations are turned over to fertilized hybrids, is expected to be beset with difficulty.

Unfortunately, there would appear to be only two choices:
— sticking with extensive agriculture using local, non-manured varieties, with productivity at around 500-1500 kg copra per ha and increasing competition from oil palm products;
— developing the use of manured hybrids involving a lower cost price.

As far as mineral nutrition is concerned, it is important to stress the specific part played by chlorine, which the IRHO showed to be essential back in 1970.

A shortage of this element cuts production by about 50 % (half on the number of coconuts and half on the thickness of the albumen).

So it is easy to understand why the peasant farmers traditionally planted coconut palms along the shore where many fine grains of sea salt from the ocean are deposited and why potassium-rich soil (in the Philippines and Indonesia) produced potassium chloride.

Deposits of potassium chloride decrease rapidly with distance from the shore and there may be considerable chlorine deficiency in areas in the interior, thus making a minimal amount of fertilization necessary.

Solutions to plant health problems

A considerable amount of attention is also being paid to the hybrids' reaction to disease and solutions are emerging for each particular case.
— Cadang-Cadang (Philippines) is caused by a viroid.

The method of transmission is still unknown, but the production of tolerance tests for strains and hybrids, by viroid injection, is a means of selecting the most tolerant hybrids.
— Fatal yellowing has been put down to mycoplasms in the Caribbean (Jamaica and Florida) and in West Africa (Cameroon, Togo and Ghana). The transmitter in this case is the leaf hopper *myndus crudus*. The Red Dwarfs of Malaysia are very tolerant, as is the Red Dwarf × Grand Panama hybrid.
— Fatal wilting is transmitted by *myndus taffini* in Vanuatu and a large number of introduced varieties are susceptible to it. Both the local variety and the IRHO hybrids are resistant.
— Bleeding of the trunk is caused by a mineral imbalance (shortage of chlorine, too much nitrogen, etc.) and by *ceratocystis,* a fungus.

Disease may in some cases be observed in popular hybrids, as in local varieties and dwarf mother plants, but disease has never been transported from one continent to another when vegetable matter has been shifted.

The IRHO rule is to be very careful in this vast coconut plantation renovation scheme in which local varieties are being replaced by hybrids.
— Teams of pathologists and entomologists have to be formed to improve our understanding of existing diseases on large local palms and on the dwarf plants throughout the world.
— The prospection and creation of collections of different samples in research stations and gene banks has to be expanded so as to make for the variability that will provide a choice when handling problems in the future.
— There must be more testing of behaviour towards different ecological situations and diseases (to see whether hybrids are tolerant or resistant).

As with oil palms, *in vitro* research into vegetable reproduction is under way. So far, embryoids have been obtained, but there is still a long way to go before the planter himself gets the benefit of this technique.

Coconut shells are a first-class fuel for gas generators for tractors and trucks. Generators that use waste or waste and shells are used to dry the copra and feed alternators; the use of these by-products to produce poor-quality gas will bring down energy costs considerably.

It is also worth noting that the waste, which contains a high proportion of two elements that are very important for the coconut palm, i.e. potassium and chlorine, can, if it is left *in situ,* return these elements to the soil and provide part of the supply the trees require. The first experiments show that 60 % of potassium can be returned to the soil over an 18-month period in this way.

Outlook for the future

Palm oil represents 9 % of the world oils and fats resources as against 5 % in 1960 and coconut oil 5 % as against 7 % in 1960.

These changing trends are due to an increase in the yield per ha on the plantations. This is faster in oil palms than in coconut palms, because most coconut palms are grown on village plantations (where the result of research schemes take longer to penetrate) and because of a large increase in the areas planted with oil palms in the Far East, where the average yield is over four tonnes of oil per hectare.

Productivity could well increase further in the future because of, for example:
— the use of plants now at the laboratory stage but which will no doubt be in general use by the end of the decade for the oil palm and a few years later for the coconut palm;
— programmes to replant what are often very old coconut plantations with much more productive hybrids.

Prospects of further development, which would be very considerable but difficult to predict exactly, are there.

The development of the Amazon basin has hardly begun. The oil palm is the best card to play when it comes to developing the western part of this humid tropical area where there is too much rain for cocoa or cattle and the problem of mycrocyclus in the rubber industry has yet to be solved. However, the climate is very suitable for *elaeis guineensis.*

Coconut palms are grown in the Amazon and also in the less rainy countries more to the south, where they help meet the large local demand for coconut milk and grated coconut.

The use of palm oil (as it is, or in the form of esters) in diesel engines is not out of the question in abnormal circumstances where palm oil is 50 % more expensive than diesel fuel, such being the case in certain countries of West Africa today.

If alcohol fuel can be produced in Brazil, there is no reason why palm oil diesel fuel cannot be produced at a cost price per calory that is at least as low.

The coconut palm often complements the oil palm, as it is less sensitive to environmental conditions (i.e. water shortages) and can well constitute the basis for the development of regions where the rainfall is not so good.

Another asset is that, as compared to the oil palm, the cost of harvesting is much lower and plantations can be exploited for almost twice as long. However, although the techniques of processing the palm bunches have been perfected, the present methods of copra manufacture require a great deal of labour. But improvements have been made in recent years.

If better technological improvements (including energy independence via the use of waste and shells) can be found in the near future, the cost price will be cut and coconut palm growing will become a more attractive proposition for the planter and so will develop the world over. o M.O.

Cotton: the organization of research in West Africa

by J. DEQUECKER (*)

Cotton is one of the most important commodities. It provides clothing, meeting a basic human

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requirement and, with an annual production of more than 14.5 m tonnes, the cotton industry supplies about half the textiles on the world market.

The international cotton trade is of considerable importance. For some developing countries with few natural resources, cotton is the main, if not the only, export product and the International Cotton Institute reckons that the various activities in and around the cotton industry provide work for more than 140 million people in the Third World.

Something that often escapes attention is that cotton is also an interesting food crop. For example, the 3.3 m t of cotton seed represents the world's fourth most important source of oil after soya, sunflower and colza. Cotton oilcake is also a very valuable source of high quality protein (4 m t), although it is inadequately exploited at present.

The whole of this food crop potential can be simply measured from the following example of one tonne of cotton seed, produced in the particular case of the Ivory Coast on a plot of less than 1 ha: fibre 410 kg; oil 100 kg; oil cake 200 kg (including 95 kg pure protein); waste 290 kg (linters, husks, etc.).

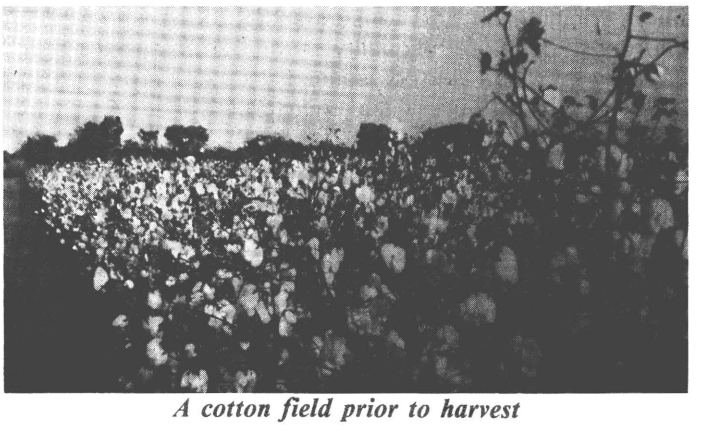
So it can be easily understood why cotton has been the subject of large-scale agricultural research programmes in the different producing countries, with a view to improving growing conditions and ensuring that the world market is supplied with high-quality fibre that can stand up to competition from synthetics.

Experience has shown that this research is very profitable. It also demonstrates that it is difficult to obtain any significant development of cotton production without it, and also that yields tend to drop after a few years when, for different reasons, research has been discontinued and continuity has not been maintained.

It is interesting to emphasize the conditions in which this agricultural research into the cotton development process can be organized, in the light of experience obtained by the IRCT over 37 years of work in the cotton-producing countries of West Africa, in close collaboration with the national research bodies. We should add that, in these countries, cotton is produced on very small plots (often of less than one hectare) by small farmers who usually practise mixed farming.

The main aim of the research with which we are concerned here is not to advance scientific knowledge but to serve development, and this applied research must be considered as one of the aspects of the agricultural and economic policy implemented in these countries.

The work entrusted to researchers is no less noble than that required of their colleagues in universities and some scientific institutions pursuing work of a more fundamental nature. It requires the same stringency; it calls for the same training and the same scientific information, with the additional complication that the researcher has to take account, simultaneously, of a large number of factors that are rarely united in the controlled environment of the laboratory. The only difference is the aim. The scientists have to concentrate, essentially, on solving the problems raised by the farmers and the national firms responsible for production.



IRCT

A cotton field prior to harvest

The coherence and efficiency of the organizations set up some years ago in the countries of West Africa where the IRCT has been called upon to operate should be stressed. In these countries, the governments fix an annual guaranteed price for the growers' cotton delivered to the national markets and a national company is usually invited by the state to buy, treat and export the cotton, to deliver the seed, equipment and other input to the growers and often to provide them with back-up services as well.

In most of these countries there is also a committee on which cotton producers are represented, which meets a few months before the beginning of the agricultural year to discuss and adopt research programmes covering problems that arise, to evaluate results already obtained and to make proposals to the researchers.

This clearly makes for good relations between development and research, enabling the latter to properly adapt its programmes to the genuine needs of the producers and ensure that they put existing results to good use. This kind of organization makes maximum use of the money ploughed into research in these countries, unlike what is sometimes observed in sectors that are less well organized. With food crops, for example, the absence of suitable marketing, storage and seed management policies can make it much more difficult to apply research really effectively. Therefore, it is clear that without an efficient seed distribution system, any improvements to varieties, however good they may be, will only give very disappointing results.

The multidisciplinary nature of research

This idea of subordinating research to development requirements has naturally led to the establishment of multidisciplinary organizations. The identification of problems and the need to find rapid solutions means that all the relevant disciplines and techniques have to be mobilized without delay. In most cases, most agricultural subjects are involved in working towards the aims which the researchers are then invited to pursue.

The best-known example of this complementarity of disciplines is the integrated crop protection programme, the success of which depends on the selection of varieties that are resistant to or tolerant of predators and diseases, or that present a certain precocity; on the use of suitable cultural practices as regards the sowing dates and fertilization, and, of course, on pest control (how suitable it is as regards the products applied and the timing of spraying). Lastly, a technological analysis of the

fibres will highlight the consequences of measures taken in order to develop the quality of the cotton and the agro-economist will be able to assess the cost and profitability of the projected means and measures.

This is why research teams on these African cotton research stations have at least three main kinds of specialist: experts in plant breeding, in crop protection and in general agriculture. On the better-equipped stations, there are also technology laboratories running fibre analyses, not only for breeders, but at the request of entomologists and agronomists. Obviously all these teams have to collaborate closely with each other and keep each other informed of their work.

This multidisciplinary aspect of the teams means that, while specialization is not rejected in recruitment, there is a tendency to look for a certain polyvalence and thus to place emphasis on agronomists.

This multidisciplinarity is echoed outside the station, in regional experimental networks in a controlled environment or on the farms. These networks are an absolutely essential part of the cotton research apparatus and it is indeed thanks to them that the various results obtained on the stations can be efficiently checked out in the field, over a proper area and in diversifed conditions, before being extended.

Constant adaptation of programmes

Multidisciplinary research should thus come up with properly coordinated programmes which respond to the concerns of the growers themselves. Clearly, the conditions in which these programmes are carried out guarantee that the researchers do not have to perform jobs that are pure routine or run basic studies that are of little practical interest. On the contrary, the research teams have constantly been adapting their programmes to the needs of the field.

IRCT

Cotton market in Africa

During its first years of existence, more than 37 years ago, the IRCT had to start selection of new varieties in order to get higher yields in the field and a better ginning out-turn—a demand which still constitutes a priority constraint for breeders today. Alongside this, an attempt was also made to improve the technological quality of the fibre so as to make African cotton competitive on the world market.

Similarly, after studying all the elementary problems of cultural practices (dates of sowing, spacing, soil preparation etc.), researchers pointed up the advantages of having a standard fertilization adapted to each geographical area and then went on to closer and more diversified analyses of soil requirements and studied the conditions allowing sedentary crops to be grown on a permanent and long-term basis. It was more recently that the need for improved weed control appeared.

Since the cotton plant is very prone to predators, cotton growers are consequently among the world's greatest consumers of insecticides, and this is the reason why large teams of entomologists had to set up an efficient plant protection policy. Their programmes are practical and concrete, evolving, as the years go by, with the constant development of new groups of pesticides and new techniques of spraying. It must be stressed that the work of these entomological teams is monitored with considerable attention by the development autorities, as it constitutes a vital guide in a field in which important interests are at stake and everything has to be done to moralize the market.

When the crop protection specialists draw up and implement their programmes, they try to encourage a fair balance, not necessarily a contradictory one, between economic considerations and a desire to maintain ecological stability, and this is the aim of the biological control programmes drawn up each year in which the use of beneficial insects, diseases and insect attractants is widely tested.

In some cases, the close links between the programmes and the growers' needs already mentioned lead to a varying assessment as to the length of the studies. The development leaders, more impatient, are tempted to bring out certain interesting results at once while the researchers are anxious to get statistical confirmation of these results over the period necessary, to take account of the diversity of conditions observed in the successive campaigns, and to assess the effects of the proposed techniques on the environment over a significant period of time.

Although, for example, it has always been agreed that variety improvement should be a regular part of research work, the interest of longer-term, repetitive studies on maintaining soil fertility over a long period is not always recognized by development leaders.

Experience has proved that these differences in assessment are always ironed out satisfactorily. It is true that this has been facilitated by the fact that, in the countries of West Africa under consideration, the financing of research schemes has come from special funds and never depended solely upon development organizations.

Cotton in the crop and production systems

This global approach to the problems of cotton growing very soon led researchers to look at the farming systems in which the plant was produced. This was in line with obvious agricultural imperatives whereby there had to be a proper, coherent crop rotation scheme, both to encourage the restoration and maintenance of soil fertility and to ensure the compatibility of work timetables, weed control and so on.

However, other serious concerns linked to the emergence of famine in some countries of the region were quick to appear. They led to questioning of the relations, on the plot, on the farm and in the region, between cotton and food crops. Should cotton production be considered a threat to the vital food supplies of these coun-

tries? On the other hand, is it perfectly compatible with food crops? Does it even offer a way of ensuring the development of food production?

The first observations made in cotton-growing areas have tended to lead to the conclusion that there is no drop in food production and that the farmers themselves are very anxious to provide enough food for their families. Moreover, the first studies of the officially recommended fertilizers for cotton revealed an important after-effect in year two on the food crops following cotton in the rotation scheme, i.e. an increase of 50 % in the yields normally obtained without any form of fertilization.

But the most important thing is that cotton-growing acts as a stimulus on the farm as a whole. Because the farmer can rely on his cotton sales for a fair amount of income, he can also invest in equipment (e.g. a pair of oxen and farm implements) and finance such inputs as fertilizer and insecticide, thereby developing both his farm and his production potential.

It is well known that, in the tropics, most rainfed crops are grown in very unreliable conditions in an environment that is full of risks. Recent studies have shown that cotton-growing has a stabilizing effect and is a factor of security in a situation of this kind, even if it is always possible to point to more significant record yields with other crops.

So cotton-growing soon appeared as a way of ensuring the modernization of farms, reflected initially by the spread of draft tillage, and of bringing about the right conditions for the progress of the rural community in these countries of Africa. This has led to recognition of the particular dynamism of cotton-growing as it is practised in these regions and the auto-reproductive nature of its aptitude for capitalization.

So it is easy to understand that the importance of this phenomenon provided grounds for including agro-economic studies of the systems of production used in the cotton-growing area of West Africa in the research programmes.

The effectiveness of the way the West African cotton industry is organized—which we have tried to describe very briefly—is generally recognized.

Important and sometimes spectacular results have been obtained. Let's take the example of the remarkable progress with ginning out-turn, which is a direct consequence of the work of the researchers on the variety improvement programmes. While in 1950 the yield from the ginning process was only 30.94 %, the introduction of new varieties (created by the Institut des Savanes of the Ivory Coast) produced the following improvements in cotton fibre production:

Agricultural year	Cotton seed (t)	Cotton fibre (t)	%
1965 - 1966	10 261	3 631	35,59
1970 - 1971	29 316	11 653	39,75
1975 - 1976	65 058	26 247	40,34
1980 - 1981	136 603	55 682	40,76
1981 - 1982	135 370	56 454	41,70

This progress should continue, as a new variety now being multiplied gives hope of a further 1-2 % improvement in ginning, which will bring the Ivory Coast into an outstanding position in the world cotton industry.

The financial profitability of selection of this kind needs emphasizing, because the 1 % difference recorded over the past two agricultural years led to an extra 1 353 tonnes of fibre being produced. This was worth more than CFAF 751 million in 1981-82 alone (almost US $ 2 m).

Even more interesting is the increase of yield in the cotton fields. This is the result of joint research efforts by development organizations and cotton-growers themselves.

The following table shows the trend in cotton-growing areas and of cotton-seed production per hectare in the nine countries of West Africa (CAR, Cameroon, Chad, Senegal, Mali, Upper Volta, Niger, Togo, Ivory Coast) for which regular statistics are available. A period of more than 20 years is covered.

Agricultural year	Area (ha)	Cotton seed (t)	Yield per ha (kg)
1961 - 1962	564 057	125 637	223
1966 - 1967	664 520	302 977	458
1971 - 1972	799 151	379 361	475
1976 - 1977	824 068	545 154	662
1981 - 1982	576 654	521 861	907
1982 - 1983	618 137	602 701	970

So, over the past 20 years, while the area planted with cotton has stayed more or less constant, the yield per ha obtained from rainfed, non-irrigated plots has increased more than fourfold. This is a clear illustration of the fact that the African small-holders have a proper grasp of the techniques of cotton-growing.

It is probably the best lesson to be learned from the cotton industry in the countries of West Africa today. There is no doubt that the agricultural constraints and demands of the crop, and the sound organization of production and research, have had an educational effect on the small planter, enabling him to learn about modern agriculture and obtain a good grasp of the techniques involved. It is both satisfying and encouraging to see sometimes hundreds of these techniques being taken over, more or less spontaneously, for food crops, as is shown in the use of additional nitrogen fertilizer, herbicides, etc.

Individual farmers would appear to be increasingly aware of the problems today and they are no longer willing to passively accept the formulae presented in the classic framework of the development societies. Now they are spontaneously seeking the help and advice they need to solve their problems. The same approach is beginning to be apparent among some of the back-up staff, who are anxious to see their duties develop in the direction of counselling, instead of being ordinary monitors.

If this trend is confirmed, there could well be a complete change in the rural world.

What is needed is a new approach to the environment: the introduction by development leaders, in close liaison with research workers, of a kind of management and advice service for the growers. o J.D.

Microbes in agriculture

Microbes, often said to be the humblest and most elementary forms of life, are in fact some of the most versatile and talented products of evolution. They can thrive in environments that are incredibly hostile to human life and they are infinitely more skilful synthesists than any chemist. So they constitute an extremely varied resource, whose abundant potential we are only beginning to discover." (Extract from an article on the effects of science on society by Bernard Dixon in *Impact* (published by UNESCO)) (*).

In Kenya, farmers can buy packets of microbes for a small sum and, if they follow the instructions on the label, they would get a considerable increase in their crops of leguminous vegetables. This is because they would have used a micro-organism known as *rhizobium,* one of the countless invisible allies of mankind. Biologists call this process biological nitrogen fixing or BNF.

Nitrogen is a key element of the amino acids which make up the building materials of life-proteins. It is present naturally in considerable quantity (78 %) in the air around us, although not in a form that is directly usable by plant life. It has to be transformed into ammonia first, either artificially, in a non-organic form, or naturally via the BNF cycle.

The *leguminosae* family contains almost 13 000 known species and consists of trees, shrubs, grasses and a whole group of food plants, the most important of which are soya beans, groundnuts, green beans, chick peas and field peas. All these plants are widely cultivated in the developing world, which depends on them for the bulk of its protein intake. Of the two available sources of protein, plants and animals, the former is by far the richer and the easier to produce—and hence it is the cheaper product for the small farmer to grow. Leguminous crops can yield an annual 10-17 kilogrammes of protein per hectare, whereas poultry, cattle and pigs would only provide 0.6-1.5 kg. And not only are leguminous vegetables very rich in protein: they are the only things in the vegetable kingdom which create their own form of BNF through symbiosis with the rhizobium micro-organisms, which form and colonise the nodules and bumps on the roots which are one of the characteristics of leguminosae. The fuel for the process comes from the plant and a first batch of bacteria transforms the nitrogen into ammonia, after which another, equally specialized, batch reconverts the ammonia into the nitrogen that the plant needs to develop. The bacteria are so effecient that they produce more nitrogen than they and the plant need, so the remainder stays in the soil, providing permanent enrichment. So here we have a particularly valuable by-product for soil that is poor in nitrogen. Other advantages include a considerable reduction in the requisite amounts of organic fertilizer—which usually has to be imported and is therefore expensive—and a noticeable increase in yield.

When the Kenyan farmer tips his packet of rhizobium onto the roots of his leguminous plants, he is, as it were, getting connected to a biological factory which produces a vast quantity of nitrogen fertilizer all over the world every year.

In Kenya, rhizobium is found in the waste from sugar refineries and it is distributed in 150-gram packets with instructions for use in Swahili and English. At the moment, about 900 farmers are using the product, but demand is growing at a rate that threatens to outstrip the supply from the Microbiological Resource Centre (MIRCEN) in Nairobi.

Encouraging outlook for food production

The first MIRCEN was set up in 1975 under the combined auspices of UNESCO and the International Cell Research Organization (ICRO). Today, there are MIRCENs on every continent encouraging the development of new, cheap technology and the application of biology to the rural economy as well as training for qualified staff.

Some of them, the ones in Kenya and Brazil, for example, specialize in the technology of rhizobium in their respective areas.

So far, research into rhizobium has been mainly geared to edible vegetables, but biologists will perhaps soon be looking at the economic potential of leguminous shrubs, which could be the key to reafforestation schemes in the developing world where the disappearance of wooded areas is accelerating dangerously fast. As much as two thirds of the forest cover has disappeared in some countries. Fast-growing, well-noduled leguminous shrubs would help the virgin forests not just by providing nitrogen, but by supplying protein and fibre too and, above all, by relieving the pressure on trees which are used far too freely for cooking, heating and producing wood pulp for the paper industry.

Rhizobium is at the bottom of the scale of the earth's micropopulation. At the top are algae, fungi and protozoa (some of which are just big enough to be seen with the naked eye). There is a virtually unlimited quantity of algae. Some of them are able to fix the nitrogen in the atmosphere and others to get their energy requirements direct from sunlight. They can be cultivated on a permanent basis and will grow on non-arable arid soil. Some, like rhizobium, live in symbiosis and one of them, *anabaena azollae,* fixes nitrogen. The latter thrives on the leaves of a small, freshwater floating fern found in rice paddies all across south-east Asia. Farmers have been using it, combined with algae and the plant itself, for centuries to produce the nitrogen required to grow rice. When the fern dies, the nitrogen and other nutrients present in the plant are freed and a good harvest is assured. Azollae is being studied at the International Rice Institute in the Philippines, where researchers have managed to double its mass in three to five days and produce 30-40 kg of nitrogen in a fortnight.

Blue-green algae, which fix nitrogen with solar energy, are used to improve the land and enrich the soil generally. In Egypt and India, farmers get better rice crops at a quarter of the cost of using non-organic nitrogen fertilizer.

A recent World Bank report concluded that Third World farmers have improved their food production, now at a level where large-scale famine is no longer inevitable, in spite of the population increase. The new biologically created sources of grain, combined with the increasing use of microbic fertilizer, have certainly contributed to this encouraging result. o

(*) Editorial translation of the French version, published in "Informations UNESCO". This is therefore not the English original.

THE CARIBBEAN

Striking a balance between food and cash crops

by John CROPPER (*)

Caribbean agriculture is characterized by two distinct farming systems. There are the large plantations (estates) which produce principally primary commodities (sugar, bananas, cocoa, citrus, coffee) for export to Europe and North America. And, there are small farms (less than four hectares) which produce food mainly for local consumption.

Both sectors are adversely affected by the openness of Caribbean economies to international trade. In part this is due to the history of the region, which was colonized in order to be part of an international trading system. Also the very small size and narrow resource base of the countries limit what can be produced locally.

The region has been, and continues to be, heavily dependent on imported food supplies. In the past the cost of imports has been more than met by agricultural exports. But now the agricultural trading account is in deficit due both to a relative decline in export commodity prices and to increased food imports.

Agricultural research has in the past been conducted and financed by, and in support of, the primary export commodities. However, in recent years priorities for research financed by the public sector have been shifted in an attempt to address both the growing trade imbalance and the desire for greater local food security by the newly independent countries of the Caribbean.

Export commodity research continues to be funded by the industries themselves. But the declines in these industries have led to considerably reduced research activity. For example, the world famous West Indies sugarcane breeding station, in Barbados, home of the premier collection of sugarcane germplasm, now has only two scientific staff (and an operating budget of US $ 250 000) compared to five staff in earlier years. The banana breeding scheme in Jamaica and a regional citrus research scheme are both in abeyance.

Both research systems are faced with a variety of complex, though different, problems. The largely plantation-based export industries are in decline, or at best, just holding their own and are either not inclined or are not able to implement the improvements generated by research. This, together with the reduced budgets, has a debilitating effect on those engaged in research. Furthermore, the crops in question have been the subject of intensive scientific research for many years and it may be that the opportunities for major advances are now limited.

Once developed and found to be applicable and affordable, research fundings in the export sector have the opportunity for rapid and widespread adoption. This is facilitated by the relatively homogeneous conditions under which these crops are grown and the concentrated ownership pattern.

In contrast, widely distributed ownership, differing environmental conditions and small acreages characterize the food crop sector, and, in turn, constitute the major obstacles to research progress in these commodities.

Research in commodities for local consumption is undertaken principally by public sector agencies. Each country has a Ministry of Agriculture (or equivalent) which, except in the very smallest countries, undertakes some research. These local efforts were supported at one time by the Imperial College of Tropical Agriculture (ICTA) in Trinidad and later by the Regional Research Centre (RRC) of the University of the West Indies' faculty of agriculture (the successor to ICTA).

The Caribbean Agricultural Research and Development Institute (CARDI) was established by the governments of the English-speaking Caribbean in 1975 to replace the RRC and "to provide for the research and development needs of the agriculture of the region..." (1).

CARDI in search of solutions

Since its inception CARDI has been directed to concentrate its effort on the local food production sector—as part of the general efforts to improve food security and reduce the cost of food imports as well as to increase the incomes of farmers and improve rural employment opportunities.

Traditional commodity oriented research has not been of particular benefit to small farmers. Recognizing this, CARDI has adopted a Farming Systems Research (FSR) approach which recognizes the importance of on-farm testing and the necessity for whole farm evaluation of new techniques and varieties. This has brought major changes to the conduct of CARDI's research. The effects will be felt increasingly as new techniques which are now in the pipeline become ready for extension. FSR complements and is complemented by traditional research activities.

CARDI is testing new lines from international research institutes, commercial varieties, local selections, and lines produced by the institute. The approach adopted is usually to screen large numbers of lines in one location and then to evaluate a small number of the better lines under specific environmental conditions.

Once a superior line or variety has been identified, CARDI's further role is determined by the availability of this material from other sources and by the capacity of the local Ministry of Agriculture or others to produce it. Our role may range from the supply of élite planting

(*) Head of planning, CARDI (Caribbean agricultural research and development institute).

(1) Extract from agreement establishing CARDI, 1975.

material to a ministry of Agriculture to production of material by CARDI for distribution to farmers.

In searching for solutions to problems CARDI scientists draw on the indigenous methods of local farmers identified in the on-farm studies, techniques transferred from other countries in the region as well as the regional and international scientific community.

Our work in agronomy includes studies of plant population (sometimes involving new varieties with different features), fertilizer application, intercropping, relay cropping and method and time of planting. Crops receiving particular attention are peanuts, aroids, grain legumes, forage legumes and grasses and selected vegetables.

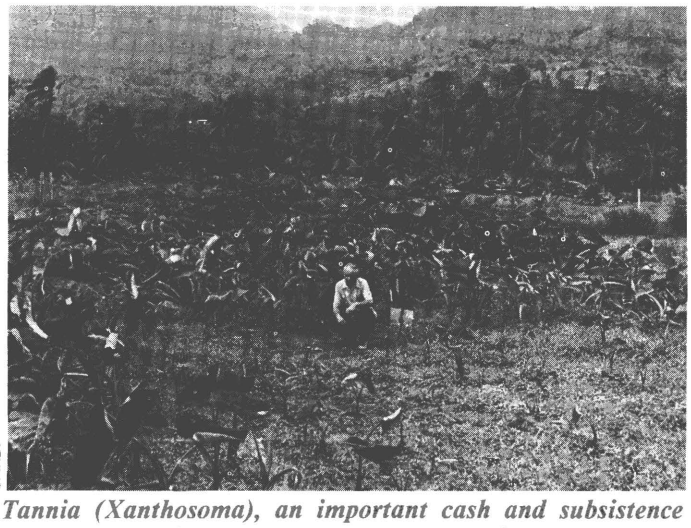
Chemical, biological and cultural means of controlling weeds, diseases and insect pests, as well as integrated control methods are all under study. These involve selecting new chemicals; optimizing application time, rates and methods; devising new rotations; identifying indigenous and exotic natural enemies; mass breeding and releasing natural enemies, and combinations of the above.

Farm labour is no longer readily available and cheap. CARDI is therefore exploring cost effective and acceptable ways of increasing productivity. These include the testing of new tools and equipment (and adapting them to local conditions); animal-powered equipment; 'walking tractors', and minimum tillage.

Our efforts to improve the animal feeding systems of specialist livestock producers are concentrating on selection of improved forage species; establishment and management techniques; conservation of forages; utilization of industrial by-products, and integration of the above into feeding systems for particular circumstances.

More recently attention has also been given to the peculiar needs of the landless and very small farmer who use livestock for both home consumption and as a 'living' bank.

CARDI is not an extension agency. Our mandate is to backstop extension agents and to provide them with techniques and materials which they can take confidently to farmers. We also need the continuing help of extension workers (and others) to identify and priorise problems which farmers face. Since research is a time-consuming activity and often there are no 'off-the-shelf' solutions it is preferable that it starts before the problem has become a major issue.



CARDI

Tannia (Xanthosoma), an important cash and subsistence crop in the Windward Islands. An EDF-funded, research programme in this area was recently started

Extension officers, through their contacts with farmers, also have the opportunity to identify successful techniques developed by farmers. We can then test these in on-farm trials to determine their applicability to other farmers.

Associating farmers in research

After on-farm trials under our control, we believe that extension officers should conduct, with farmers, on-farm evaluations of the new techniques as a first step in the transfer process. They will see the new technique practised on a few farms under their supervision and can assess with the farmer what are the benefits and whether farmers will accept it. The on-farm trial can also be used as a demonstration plot. It will be most successful when the cooperating farmer regards it as 'his' trial. This attitude can be fostered by having the farmer participate in the design of the trial and take the lead in explaining it to his neighbours.

CARDI's work programme is developed and implemented together with Ministries of Agriculture, commodity organizations and other development agencies in the Caribbean. It is financed in part by 'core' contributions from member governments as well as by research grants and contracts. The 1983/4 budget is approximately US $5 m.

The wide range of CARDI's work—many crops, diverse ecological conditions and geographic separation—in relation to its budget determines that individual research programmes are small, even miniscule by international standards. Nevertheless, CARDI's clients expect that their problems will be solved and new techniques be made available. Our particular circumstances demand that solutions are found not only quickly but also cheaply. Otherwise the cost of research might be greater than the benefits which are derived.

CARDI has had many (small) successes which have led to greater awareness of the Institute and to rising expectations among clients. Continued results can be expected from our current 'pipeline' activities and ongoing interaction and cooperation with international research centres and other members of the international scientific community.

Nevertheless, in view of changing circumstances in Caribbean agriculture, questions must be raised about the future direction of agricultural research:

- should public sector (and international donor) funded research continue to concentrate almost exclusively on food commodities, or
- should added attention be given to traditional export crops; in an attempt to boost their output and competitiveness, or
- should there be a major search for new export commodities.

Answers to these questions, which can come only from senior policy makers in the region, will determine the direction of CARDI's research activities in the future

o J.C.

IVORY COAST

An instrument of dialogue and cooperation with the EEC

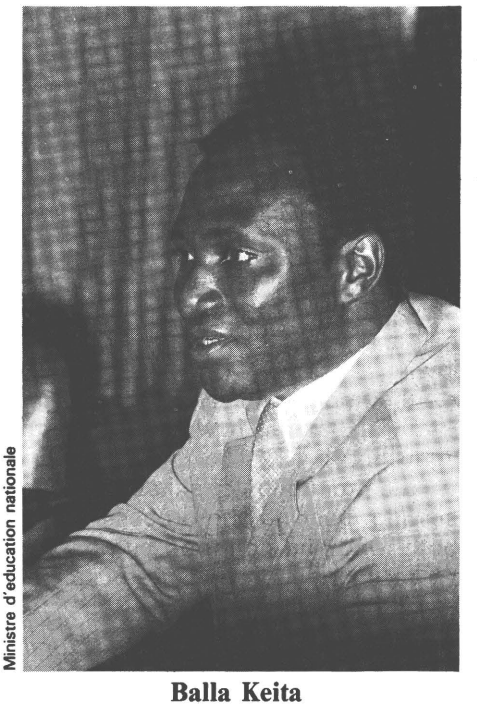
by Dr Balla KEITA (*)

"This research, theoretical and applied, now being carried out in the fields of science, technology, medicine, economics, sociology and education, has to lead, in as multidisciplinary, diversified and open-minded a way as possible, to the establishment of the instruments of progress in the long term, as proof of our desire to make ever better forecasts of and preparation for the future."

(Extract from President Félix Houphouët-Boigny's message to the nation, 7 August 1969).

"The system of programming that has been devised has finally enabled the Ivory Coast to achieve a relatively satisfactory control over the research carried out on its territory."

(Extract from the report on agricultural research in the Ivory Coast by the International Service for National Agricultural Research, ISNAR, 1982).



Ministre d'éducation nationale

Balla Keita

Scientific and technical research is one of the driving forces of Ivory Coast's development strategy. From the very beginning of the second decade of independence, the political will of both party and government was consolidated and given practical shape, in this field, by the creation, in 1971, of a ministerial department to coordinate and implement a specific scientific and technical research policy, as outlined in the five-year plan for economic, social and cultural development.

The main guidelines

The philosophy behind the policy can be summed up under three points:

— stop dreaming and promote a highly realistic scientific policy with the sole aim of serving the nation and the peasants, whose sacrifices enable the nation to thrive, first and foremost. Ivory Coast has no desire to conquer the earth;

— keep the conquest of science and technology firmly in our sights in the light of our nation's desire for a happier existence;

— realize that the true agent of scientific and technical progress is man himself—which is why particular attention has to be paid to training national teams of researchers and technicians and ensuring that they play a greater part in the management and implementation of research programmes.

The main functions of scientific and technical research

In Ivory Coast, scientific and technical research, which has these guidelines in view and is interested in an essentially pragmatic approach, is performing six vital tasks:

— providing back-up for development schemes in agriculture, animal husbandry, fishing, forestry and the protection and conservation of natural resources, the development of animal and vegetable products and by-products, health, education and culture;

— anticipating and forecasting, because, in addition to providing answers to immediate problems, research is also working for medium- and long-term development requirements, in particular in the fields of improvements to strains, growing techniques, protection against predators and disease, systems of production, soil protection and conservation, the development and rational management of the resources of the savannah, the forests and the seas, the modernization of farms, new and renewable energy, development pathology and teaching methods and syllabuses;

— developing and spreading newly perfected technology, both to farmers in the different rural areas and to technique extension services, via a network of experimental units and back-up points across the country;

— training through research and for research, via introductory courses for students at graduate and master's level and more advanced sessions for candidates wishing to go further. Also via the provision of specialist study grants for people wishing to prepare doctorates in Europe, the USA, Canada and so on;

— constituting and protecting the national scientific heritage;

— organizing and disseminating scientific and technical information at national, sub-regional and international level.

The link between research and development

The choice Ivory Coast has made of priority avenues and programmes of research is the result of the guidelines that have emerged from the various bodies involved—i.e. the programme commissions and technical committees which bring together the different agents of development, the researchers and the recipients of the products of their research.

This means that periodic adjustments can be made and

(*) Ivory Coast's minister for education and scientific research.

that research activities can be geared in a more operational manner to ongoing development schemes.

It has enabled the major themes, on which national research activity and the dialogue with our partners in bilateral and multilateral cooperation hinge, to be outlined. There are three main aims here:

Firstly, reducing external dependence, particularly as regards food

Scientific and technical research as a support for our policy to promote food crops and cut food imports (animal and vegetable) is stepping up its efforts in the following fields:
— the improvement of food-based production systems involving animal husbandry, fish-farming, forestry and agriculture;
— the production of suitable technology for storing, preserving, packing and processing agricultural produce for both food and non-food purposes;
— mechanization and motorization as elements of the modernization of farms.

Secondly, promoting agricultural and agro-industrial exports and maintaining their quality and competitiveness on the international market

Here again, scientific and technical research, as a means of promoting export crops, is concentrating on three things:
— the creation of high-yield varieties to meet consumer requirements;
— the development of technology to ensure better packaging and an increase in local value added;
— a drop in production costs.

Finally, improving the living conditions and standards of both rural and urban communities

Here, scientific and technical research geared to backing up the health and environment policies is trying to improve our knowledge and obtain a better understanding of:
— the evolution and transformation of natural and developed ecosystems;
— the main (nutritional, viral, bacterial and parasitic) pathologies linked to and induced by the environment;
— the possibilities of using natural substances (medicinal plants mainly) in therapy;
— the problems of education, culture, information, communications and housing.

A move towards the internal structuring of the national system of scientific and technical research

Although Ivory Coast has for many years leaned on external sources, particularly the French research bodies (ORSTOM and GERDAT) in its pursuance of these aims, it gradually opened its doors, during a second stage, to help from the EEC (opening of an Institut Pasteur in Ivory Coast) and other Member States (the Netherlands with the Netherlands Research Centre in Ivory Coast and the University of Wageningen, Germany with research into electronic microscopy, Italy with the University of Rome's contribution to the MAB programme, Belgium with the Ivory Coast Institute of Mathematical Research etc).

Alongside this, Ivory Coast has made a big effort of its own, setting up state-funded national research centres in three main fields. These are notably:

— The *Institut des savanes (IDESSA),* which is concerned with pushing up food and animal production, increasing productivity and modernizing farms.

At the moment, the idea of setting up a forestry institute (IDEFOR), to be combined with IDESSA to form a national institute of agricultural research (INIRA) is being discussed.

— The *Centre ivorien de recherches technologiques (CIRT),* which coordinates technological research at national level, is concerned with solving problems relating to the storage, packaging, conservation, processing and development of agricultural produce and to the mechanization, motorization and utilization of vegetable and animal by-products for energy production.

— The *Institut Pasteur de Côte d'Ivoire (IPCI),* which will be coordinating all medical research in the long term.

This drive to structure the sector has also led to the expansion of the research institutes and laboratories of the national university, thereby accentuating its connection with development.

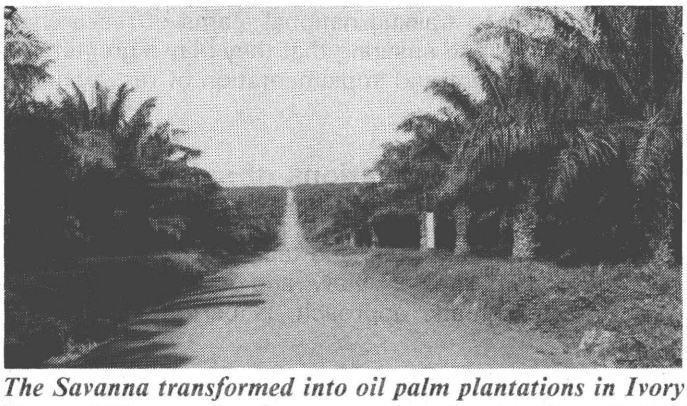
This national drive has resulted, above all, in monies being allocated to scientific research from the state budget, about 0.4 % of GNP is now being used for this purpose.

Towards a dialogue and greater cooperation with Europe

Ivory Coast, a country of dialogue in essence and by conviction, intends strengthening the foundations of its national scientific and technical research system by opening its doors, even more widely, to international cooperation and by establishing scientific relations with all countries and institutions interested in helping it train its cadres, provide scientific equipment for its structures, organize its research teams and manage its scientific and technical information.

In exchange, it is willing to welcome researchers from friendly countries, as part of their training, and join with them to run programmes of joint interest that will be of benefit to its own development and to that of the subregion and the international community as a whole.

Bearing in mind the past and present links binding us to Europe, the European Community has an essential part to play in promoting science and technology for the development of our continent. The dynamism of our develop-



The Savanna transformed into oil palm plantations in Ivory Coast. "The system of programming that has been devised has finally enabled Ivory Coast to achieve a relatively satisfactory control over the research carried out on its territory"

ment and that of Africa as a whole will depend on the standard of European scientific influence in the sub-region.

And here, Ivory Coast, for its part, feels that the foundations of the dialogue between the EEC and the developing countries have already been laid, as the European programme of science and technology for development reflects its prime concerns. These converging views clearly emerge from the priority the EEC has put on development projects to boost the diversification of activities and increase income in the rural world, to foster self-sufficiency in food and keep young people on the land by providing the sort of technical, social, cultural and medical environment that will encourage their fulfilment. o B.K.

SENEGAL

Research in our agricultural development

by Mbaye NDOYE (*)

The establishment in 1921, soon after the World War I, of the Bambey experimental groundnut station may be regarded as the very beginning of agricultural research in Senegal. Since groundnuts had been introduced in the 19th century it had become increasingly important that production should be rapidly increased.

Genetic selection of groundnuts was started during that period, at the same time as the first attempts were made to mechanize traditional agriculture, which had been entirely manual up until then. Fairly simple ass- or horse-drawn machines, such as seeders or hoes, were the first to be used.

It was not until the 1930s that the first three or four researchers working in Bambey modestly began the early studies on the crops associated with groundnuts in the traditional system of cultivation: pearl millet (*pennisetum*), sorghum and niebe (*vigna*).

The dissemination of the early results obtained with regard to groundnuts had a quite remarkable snowball effect, particularly insofar as cultivation techniques were concerned.

This brief resumé gives some idea of how far back research in Senegal goes and what it was primarily concerned with. We shall now take a look at the main results obtained in certain areas of agronomic research (legumes, cereals and market gardening crops) and their impact on agricultural production in Senegal before examining future prospects in the light of current research programmes at the Senegalese Agricultural Research Centre (*Institut sénégalais de recherches agricoles* — ISRA).

This is fairly difficult to gauge. Merely looking at the trend of production, although a very convenient approach, is not sufficient to substantiate a particular view.

(*) Director of the plant production research department.

The following table shows the trend of production over the past few decades for the country's two main crops, groundnuts (legumes) and millets and sorghums (cereals).

Production (*) ('000 tonnes)	1934	1940	1945	1950	1955	1960	1965	1979
Groundnuts	450	525	420	490	600	890	1120	673
Millets and sorghums	260	350	265	325	500	390	550	520

(*) Reports of Senegal's Agricultural Services Directorate.

While there has been a clear overall tendency for production to increase, it has varied considerably from one year to the next, the obvious result of the precarious ecological conditions, which in recent years have been marked by a long drought.

Over the past 40 years agricultural research has made available to farmers in Senegal a number of new varieties and improved techniques which have definitely contributed to increasing the level of production. These varieties and techniques are responsible for the increased area of land given over to cereals (introduction of animal traction) and for the higher cereal yields.

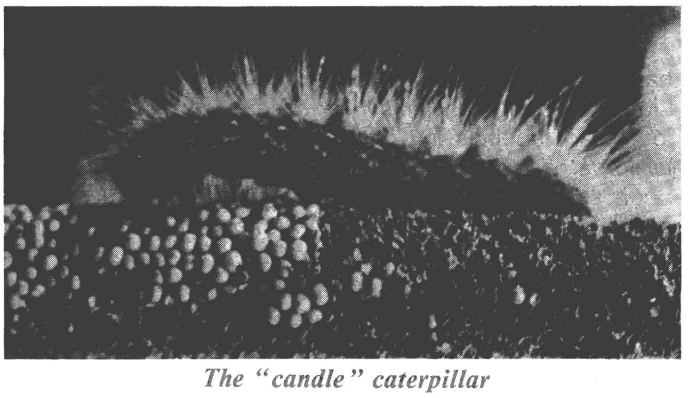
Industrial and grain legumes

Groundnuts: one of the oldest improved varieties, which is still widely grown in Senegal, is 28-206, which is adapted to the regions of the Sudanese and Sudano-Guinean zone (rainfall of between 650 and 1 000 mm per annum). It should be noted that this variety is widely used in the other countries of this zone (Gambia, Mali and Niger).

Of the most recently obtained and most sophisticated varieties mention must also be made of the short-cycle varieties 55-437 (90 days), which were developed for northern Senegal but are today widely used in the centre of the country because of the drought, and 73-30, which was developed at a time when the ecology of the region was not as severe and has the same cycle as 55-437 but also has the advantage of being dormant.

The plastic variety 73-33, with a 105-day cycle, and 69-101, which is resistant to rosette and is well suited to southern Senegal, should be noted as examples of the many varieties of groundnuts for oil.

Niebe has been traditionally cultivated in Senegal. It was studied extensively during the '60s because of its value as a food for humans but the research work on this



NDOYE

The "candle" caterpillar

crop was virtually suspended between 1974 and 1979. A new programme was started up using plant material available in collections and exogenous stock introduced from outside. The most striking examples of the varieties created during the first period of research on this plant are 58-57, 59-9, Bambey 21, 58-187, Ndiambour and Mougne, which were selected from the improved local varieties for grain quality, length of cycle (75 days) and sensitivity/insensitivity to the photoperiod.

This work made it possible to increase the area of land planted with niebe in Senegal and also niebe production to an annual average of 80 000 ha and 20 000 tonnes of grains respectively in the period 1968 to 1970. The resumption of work on this plant was to concentrate on entomological protection of the crop (this problem being one of the major constraints to niebé cultivation) and improvement by introducing plant material in order to reinforce local collection and relaunch selection on new bases.

In the field of crop protection the results available and accessible to smallholders make it possible, with one or two treatments, to treble or quadruple yields, increasing them from 400-450 kg to 1 200-1 800 kg per hectare with the improved varieties referred to above, but in pure cultivation, sown very early as soon as the first or second rains fall.

Millet: souna III, one of the first synthetic varieties, was selected from the local souna varieties. It is an early millet, taking 90 days to mature, with a potential of some 2.5 tonnes/ha, and it is widely grown in rural districts in Senegal. It is characterized by its tolerance of drought and the principal diseases: mildew (*sclerospora*), long smut (*tolyposporium*) and ergot (*claviceps*).

The results obtained from the new 1976 programme are at the pre-extension stage but the yields already obtained on small farms give grounds for optimism.

The recent development of ecological conditions has given rise to severe attacks by many entomological species previously regarded as secondary. One of the most remarkable species, the development of which has particularly alarmed agronomists, is the "candle" caterpillar (*raghuva albipunctella de Joannis*), which made its first appearance in 1974.

Considerable progress has been made in the growing of sorghum, maize, rice and in market gardening.

The impact of agronomic research on agricultural production in Senegal is seen most clearly in terms of the number and quality of the varieties developed and disseminated among smallholders for the various species cultivated.

It should, however, be noted that many techniques have accompanied the dissemination of these varieties. Light manuring formulas have been defined for the various plant species and different climatic zones.
In some cases the improved varieties disseminated have been shown to be highly susceptible to pests and disease. For certain plants such as niebe, rice, groundnuts or market gardening crops, solutions are available and are even being extended to farmers. All involve pesticide treatments which, while viable for cash crops, are not always worthwhile for food crops. On the whole, the introduction of the techniques and plant materials in question has had a major impact on methods and production. One of the most remarkable aspects is the widespread drilling of all crops, resulting from the use of animal traction in the case of the country's main product, groundnuts.

Prospects

The spread of new varieties and techniques among smallholders has profoundly affected agricultural production in Senegal. One of the most striking results is that, for groundnuts and millet, the 1.5 t/ha regarded as the limit of what could be obtained in subsistence farming was exceeded back in the '70s in the areas with good extension services, which brought to the fore the problem of intensification. All the research programmes conceived in recent years took this hypothesis as their starting-point, and the long drought has made nonsense of it.

The development prospects of the agronomic research programmes integrate all of these technical achievements and are based on the own resources which the Senegalese state makes available to agronomic research in general, the Senegalese Agricultural Research Institute (ISRA) in particular and the contribution of international aid via the agricultural research project which is starting up within ISRA.

Within the new programmes structured around products such as millet, rice, groundnuts, sorghum, maize, soya, niebe, vegetables and top fruit cultivation, the development of varieties will continue to play a major role; but new research topics such as crop protection (entomology, plant pathology, weed control), rhizobiology and physiology will be developed in order to obtain varieties which are even better adapted to local conditions. In particular, experiments will be done on integrated vermin control techniques.

Within the programmes, production systems, the integration of the plant in the system of cultivation, its place in the rotation and the adaptation of varieties and types of manure proposed will be particularly studied in connection with the other farm entreprizes (livestock production and forestry, for instance).

Such an approach should make it possible in five to six years' time to come up with interesting results regarding understanding of the operation of the production system and in terms of making available the development of even more sophisticated plant material and production techniques. o M.N.

CAMEROON

Recent examples of areas of priority in research

by Dr. Jacques-Paul ECKEBIL (*)

An analysis of trends in the rural sector between 1960 and 1980, when Cameroon's 5th economic, social and cultural Development Plan (1981-86)

(*) Director of Cameroon's agricultural research institute.

was drawn up, shows that there were a certain number of major constraints hampering agricultural development. They included agricultural research, particularly into food crops and particularly in the forest zone of the south, centre and east of the country (1).

What happened over this period was that the emphasis was placed on cash or export crops—cocoa, coffee, palm oil and rubber, for example—as a source of foreign exchange.

But reversal of this trend began in 1980, when the African heads of state adopted the Lagos Plan of Action, with self-sufficiency in food as the priority target. While the 5th Plan aims to push up export crop production slightly, very substantial increases are anticipated for food crops and the priority for agricultural research is on cereals, root vegetables, pulses and fruit and vegetables.

Cereals

Maize is grown all over Cameroon, but 70% of the total production (an estimated 475 000 tonnes in 1978) comes from the two high-altitude, west and north-west provinces. Production is expected to reach almost 500 000 t by the end of the 5th Plan.

The aim in these areas is to produce composite, high-yield varieties that are suitable for growing in tandem with other crops (the standard farming method in the region), have a 130-150 day cycle and are resistant to the two main diseases of this particular ecology—*helminthosporiosis* and rust. The ears also have to be well covered to avoid damage by birds and ensure the sort of product the consumer wants. Quality-wise, the idea will be to incorporate the opaque-2 gene, which increases the protein and essential amino-acid content, in some of them.

The maize potential of lower-lying areas is not so great. Attention will be given, during selections, to the cycle of the variety, which tends to be shorter, so as to adapt it to the rainfall of the region. Pathologically speaking, these varieties should also have sound resistance to streak.

Sorghum is only grown in the north of Cameroon. Production, which was around 400 000 t in 1979, should reach around 430 000 t by the end of the plan. Rain-fed sorghum, by far the most common variety, is grown throughout the northern province, but the best results are achieved where rainfall is between 700 mm and 1000 mm. Beyond that point, maize, which is more productive and makes better use of water, is replacing sorghum to an ever-increasing extent.

Research is concentrating on developing average-sized varieties (1.5-2 m) which are insensitive to light, have a short (80-100 day) cycle, present a certain resistance to drought and to striga and can benefit from the after-effects of fertilizer put on cotton when they follow this crop in a rotation system. The grain will be white, with no brown layer and semi-vitreous and the well exerted panicule will be semi-slack so that the air can circulate better and the development of moisture can be avoided (2).

Paddy rice production, which was 46 000 t in 1979, should have reached 130 000 t in 1986 at the end of the development plan. It is mainly produced on irrigated plots, with strong back-up services for the peasant farmers, in three development projects—the Semry, with 10 000 hectares (3000 ha using a two-crop system), the Ndop plain, with about 1000 ha, and the Soderim scheme.

Selection is geared to high-yield varieties that can take relatively high doses of nitrogen, that are resistant to pyriculariosis, rynchosporiosis and bacteriosis (particularly the Semry project), can stand the cold when grown in the off-season and produce good quality grains.

Although rainfed rice is currently grown over only a fairly small area, it is expected to expand, particularly in the southern part of the North Cameroon province, under the North-East-Bénoué project (800 ha in 1982). The plant to be produced should have a fairly short (90-day) cycle, tiller well, be resistant to drought and present fairly stable resistance to pyriculariosis. The target yield is around three tonnes per ha.

Tubers

These are an important part of the diet of some of Cameroon's population, particularly those living in the forest area, where tubers provide most of the calories. The main crops grown are cassana (manioc), macabo, yams and sweet potatoes and taro is also produced, particularly in the west.

Cassava is by far the most commonly grown tuber in the country. An estimated 620 000 t were produced in 1978 and 660 000 t are anticipated in 1985.

Research into cassava only began seriously in 1978, with the national tuber improvement programme (technical support from the International Institute of Tropical Agriculture of Ibadan in Nigeria). Selection is aimed at obtaining high-yield varieties (2-4 times that of the local varieties) that are precocious (12-month cycle), have a satisfactory root structure (short to medium roots with a short neck), high resistance to mosaic virus, anthracnosis, cercosporiosis and bacteriosis (particularly in high-altitude savannah areas) and are suitable for single or associated crop systems.

Alongside this work on improving the varieties of tuber available, an attempt is being made to perfect suitable growing methods (dates of planting, density of plantations, types of land preparation etc) and the sort of growing methods that involve very little input and are therefore easy to get across to the peasant farmers.

As for yams, the idea here is to identify, through selection, the best clones from the collection of varieties gathered in the country itself and abroad. Research is geared, in particular, to *Dioscorea dumetorum,* which has a very high potential yield (of more than 30 t per ha per annum), but has the drawback of hardening shortly after harvesting, making preservation very difficult.

In collaboration with the IMPM (nutrition centre of the institute of medical research and study of medicinal

(1) Extracts of an article supplied to the "Courier". The parts dealing with cash crops have been deleted.

(2) Muskwari sorghum is also bedded out and grown on very clayey black earth in the off-season.

plants), we are trying to elucidate the biochemical mechanism of hardening. We have started working on crosses with the aim of isolating in the descent non-hardening or low-hardening varieties.

Leguminous vegetables

In view of the considerable contribution that these vegetables can make to the quality of the population's diet, the 5th Plan puts priority on their production.

With groundnuts, the emphasis will be on selecting cercosporiosis-resistant varieties. Research will also have to collaborate closely with the seed mass-production projects by supplying basic seed every year.

Research into **soya**, begun at the Dschang station in 1966, has made it possible to produce a whole growing system for high altitudes and to get the soya project, aimed at getting the peasant farmers to adopt this new crop, under way. The two-year pilot phase is about to end and the results, particularly the extremely positive reaction of the peasants, are sufficiently conclusive to warrant a decision on continuation being taken.

Research should look to obtaining long-cycle varieties for second cycle crops in the Mbos plain and there is a need for innoculation, plant health protection and a study of crops that can be grown in tandem.

Beans are only grown on any large scale in the high altitude zones of the west. In collaboration with the CIAT, we have selected varieties that are currently in use.

Research is geared to obtaining high productivity dwarf varieties that are resistant to the main diseases and popular with the consumer.

Niebe is grown over an area far wider than are beans. Research, mainly in the west and north of Cameroon, is aimed at obtaining short cycle varieties that are rigid, productive and yield the sort of grain that people like.

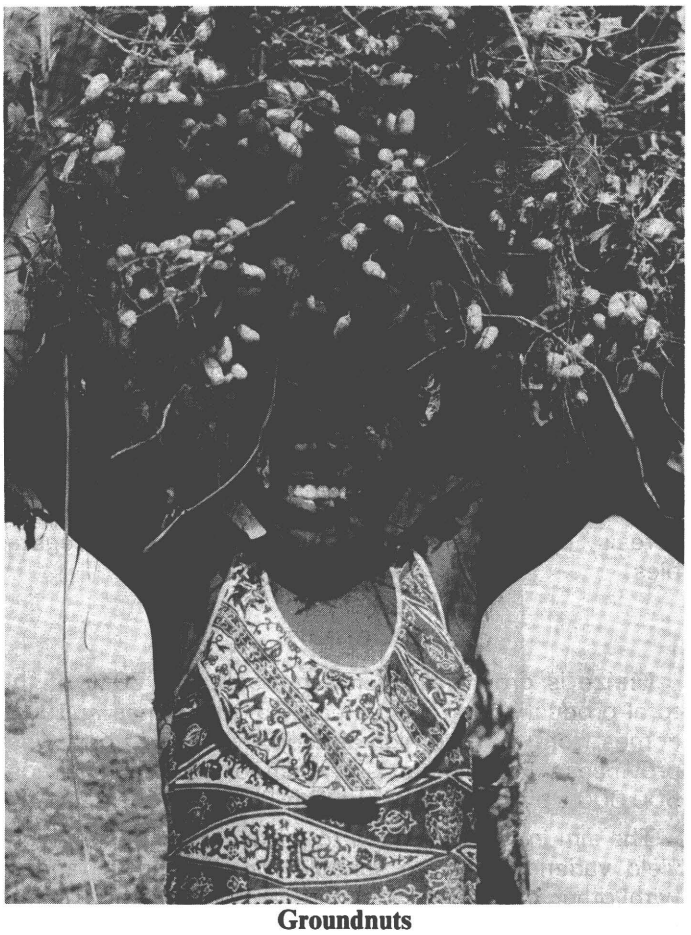
As insects are the main problem with niebe production, research obviously aims to come up with fairly simple NLV methods of control.

Fruit and vegetables

Fruit research in Cameroon is run by the IRFA (the fruit and citrus fruit research institute, one of the organisms of GERDAT, which used to have a property in Njombe, in the Mungo area, which is why research, until a few years ago, was in Njombe. The subjects covered were pineapples, citrus fruit, avocados, mangoes, guavas and grenadillos.

Since 1978, the aim of the agricultural research institute has been to bring fruit research out of Njombe and try out its results in other environments in Cameroon by setting up multispecific diversification orchards where there are a number of varieties of each species, so as to reveal any differences in behaviour of varieties of the same species. Two such diversification orchards have already been created in the high altitude of the west. The one in the medium altitude of the centre-south began two years ago and the one in dry savanna of northern Cameroon started this year.

Little research has been done into vegetables as there are few people researching into them. We hope, with two researchers scheduled to arrive in 1984, to start



Groundnuts

"Emphasis will be on selecting cercosporiosis-resistant varieties. Research will also have to collaborate closely with the seed mass-production projects by supplying basic seed every year"

work in the west (this is very suitable because of the altitude) and in the north, in liaison with the lower Benue valley irrigation project downstream from the Lagdo dam.

Soil

The aim here, with the recent opening of the national soils centre, is to achieve better coordination of soil investigation all over Cameroon.

Information on soil will therefore be more centralized and better distributed and the IRA pedologists will have to take part in all work on soil (inventories and soil resources), ensure that this information is properly integrated in our wider knowledge of the natural environment and make their contribution to decisions on both regional and rural development.

So the development of food crops, as part of the policy to achieve self-sufficiency in food, is one of the government's main concerns and it should be reflected in the agronomical research programmes, where particular emphasis has been placed on extending the work on cereals, tubers, leguminous vegetables and fruit.

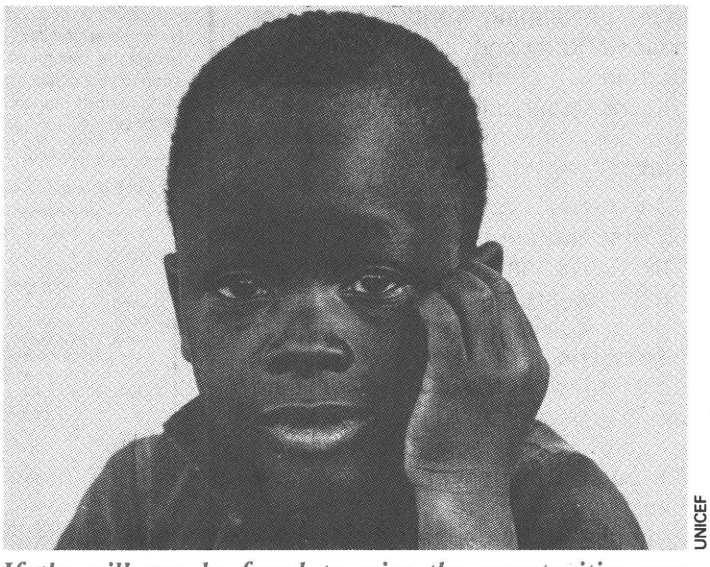
Although the more theoretical side of this research is going fairly well, the same cannot be said for farming systems, where a real effort is called for, as the ultimate aim of agricultural research is to produce technical production systems that have been improved and tested for the peasant farmer. o J.-P. E.

The state of the world's children 1982-83(*)

Four breakthroughs could soon be saving the lives of 20 000 children a day, says this year's "State of the World's Children" report from the executive director of UNICEF, James Grant.

On present trends, the proportion of the world's children living in malnutrition and ill-health—a proportion which has been steadily declining since the end of World War II—will remain about the same at the end of this century as it is today. Meanwhile, the absolute number of malnourished children in the world will increase by 30 %.

In response to this worsening situation, UNICEF has this year been distilling down its own 36-year experience and consulting with international authorities to try to find ways of streamlining the development effort in order to maintain progress for the world's children against the headwind of world recession. "Our overall conclusion", says the new report, "is that the deepening of the present crisis is now matched by the appearance of new opportunities on an equal if not greater scale."



UNICEF

If the will can be found to seize the opportunities now offered by recent scientific and social breakthroughs, then the goal of adequate food and health-care for the vast majority of the world's children need not be a dream deferred— UNICEF's "State of the World's Children" report 1982-83

A major breakthrough: the oral rehydration therapy

The first and most important breakthrough is the discovery of oral rehydration therapy (ORT), described by "The Lancet", a leading British medical journal, as "potentially the most important medical advance this century."

By far the biggest single cause of death among the world's children is the dehydration caused by diarrhoeal infections. In approximately five million cases a year, diarrhoea leads to sudden and severe dehydration which drains away up to 15 % of the child's bodyweight. At that point, death is only hours away. Previously the only treatment has been intravenous feeding administered by qualified nurses or doctors in expensively equipped hospitals or medical centres. With the discovery of ORT, dehydration can now be treated by a mixture of sugar, salt and water administered by the mother in the child's own home. The ORT breakthrough is based on the discovery that glucose accelerates the body's absorption of solute and water. In practice, that means that eight teaspoonfuls of sugar added to one of salt in a litre of boiled and cooled water makes "rehydration by drinking" an effective treatment for most diarrhoeal infections.

To make that discovery relevant to those who need it most, says UNICEF, every available channel—from the hospital to the corner shop—will have to be used to promote cheap packets of oral rehydration salts or to let mothers know how to make and use the home-made version. "Only an inexcusable lack of national and international will," says the report, "can prevent the bringing of ORT's benefits to the vast majority of children in need."

A new heat-stable measles vaccine

The second breakthrough is the development of a more heat-stable measles vaccine which has effectively extended the reach of immunization's arm. In the developing world, measles kills an estimated 1.5 million young children a year.

Immunization costs about 10 cents a shot. But until recently the vaccine had to be kept frozen until one hour before use. And that effectively excluded the vast majority of children in the rural areas of the developing world.

The new vaccines have to be kept cool. But freezing is no longer necessary and less expensive refrigeration technology is involved. The result is that measles could one day join smallpox on the list of major killer diseases which have been eliminated.

At present, a total of 5 million young children still die every year from immunizable diseases. Tetanus alone kills an estimated one million. Whooping cough claims the lives of another 600 000. The cost of immunizing all children against all 6 major diseases would be approximately $ 5 per child.

Promoting breast feeding

The third opportunity is the present campaign to halt and reverse the trend from breast- to bottle-feeding. In poor countries, there is now evidence to suggest that babies who are bottle-fed are 3 to 5 times more likely to die in infancy than babies who are breastfed. "Usually unable to read the instructions on a tin of formula, or to afford enough artificial milk, or to boil water every four hours, or to sterilise the necessary equipment, or to return to breast-feeding once she has stopped," says UNICEF, "the low-income

(*) Source: UNICEF.

mother, who is persuaded to abandon breastfeeding for bottle-feeding in the developing world, is being persuaded to spend a significant proportion of her small income in order to expose her child to the risk of malnutrition, infection, and an early grave."

In recent years, the fight-back against bottle-feeding has begun. Thirty five nations have now adopted, or are in the process of adopting, legislation to control the marketing and promotion of breastmilk substitutes and a world-wide campaign is underway to promote knowledge of breastfeeding's advantages. "If such a campaign were comprehensive enough to change medical attitudes and hospital practices, to control irresponsible promotion and marketing of infant formula, and to help mothers both to improve their own nutrition and to be reassured that breastfeeding is best," says UNICEF, "then one million infant lives a year could be saved within a decade from now."

Making malnutrition visible

The fourth and perhaps most surprising idea advanced in this year's "State of the World's Children" report is the mass use of cardboard child-growth charts kept by each mother in her own home.

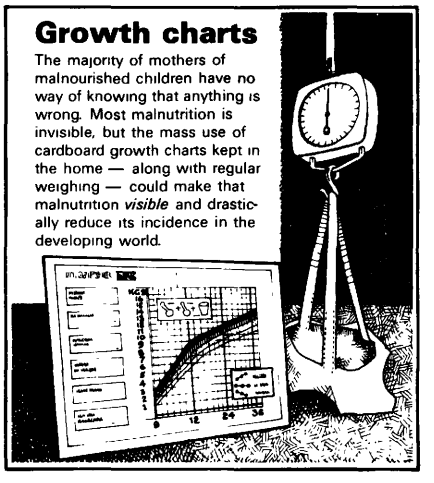
The importance of the charts is that child malnutrition is usually invisible. One survey in the Philippines, for example, has shown that almost 60% of mothers whose children were malnourished did not know that there was anything wrong. Regular monthly weighing and the entering of the results on specially designed growth charts can make malnutrition visible to the mother. "When the mother can see that there has been no weight gain from one month to the next," says UNICEF, "her spontaneous reaction, if there is food available, is to give the child more at the family's evening meal, or to feed the child more frequently, or to persist in persuading and helping the child to eat even when the appetite is depressed. And in as many as half of all cases of malnutrition, there is evidence to suggest that it is the invisibility of the problem rather than the absolute lack of food which is the main constraint on improving the diet of the child."

The Survival revolution

New scientific and social developments of recent years are now coming together to put into our hands the means of bringing about a child health revolution at such a low cost and in such a short span of years that a serious commitment to that revolution by governments and peoples could reduce child malnutrition and child deaths by at least half before the end of this century — so saving the lives of 20 000 infants each day *1982–83 State of the World's Children report from UNICEF*

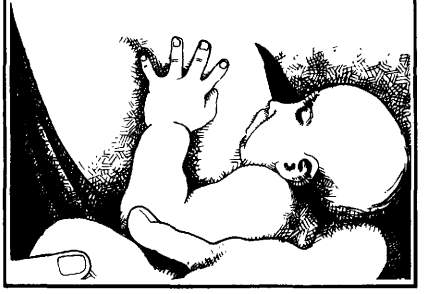
Growth charts

The majority of mothers of malnourished children have no way of knowing that anything is wrong. Most malnutrition is invisible, but the mass use of cardboard growth charts kept in the home — along with regular weighing — could make that malnutrition *visible* and drastically reduce its incidence in the developing world.



Breast feeding

It is now thought that a comprehensive campaign to promote the advantages of breast feeding could save as many as a million infant lives a year. In poor communities bottle-feeding of powdered-milk, often over diluted with impure water in an unsterilized bottle, takes the lives of many infants and leaves many more malnourished.



Oral rehydration

Approximately 5 million children die each year of dehydration caused by diarrhoeal infection. Yet it is now known that most of them could be saved by a mixture of salt, sugar and water. That discovery is potentially the most important medical breakthrough of the century.

Immunization

The spread of primary health care workers and the discovery of new techniques for storing vaccines are making universal immunization more feasible. Protection against the major diseases costs about $5 per child. Child deaths from immunizable diseases total about 5 million a year.

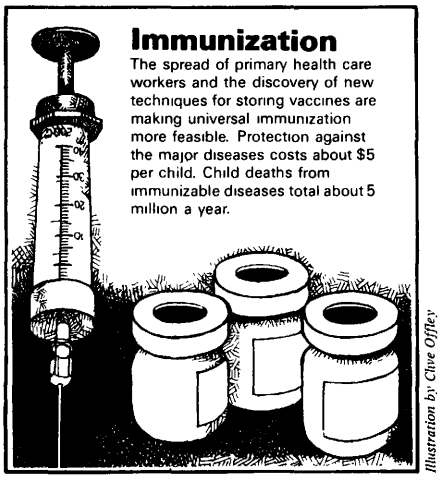


Illustration by Clive Offley

When confidence in child survival grows people generally begin to have fewer children. In the long run therefore a child health revolution would help to reduce the rate of population growth. In no country has there ever been a significant fall in birth-rates which has not been preceded by a significant fall in child death rate.

In Indonesia, two million mothers in 15 000 villages are now regularly weighing their babies on marketplace scales and keeping their own growth-charts. Already, there is some evidence that the charts have helped to reduce malnutrition. The first full evaluation of the impact—and potential—of the Indonesian growth-charts will be available sometime in 1983.

"Bringing about revolution in child health"

"These opportunities to do so much for so many and for so little come at a crucial moment in history," says the "State of the World's Children" report. "Fifteen years ago, such a revolution would not have been possible. Social organization is the key to community health. And in recent years the patient work of communities, individuals, government bodies, and international agencies have helped both to discover these new opportunities and to help create the social infrastructure which now makes such revolutionary progress possible."

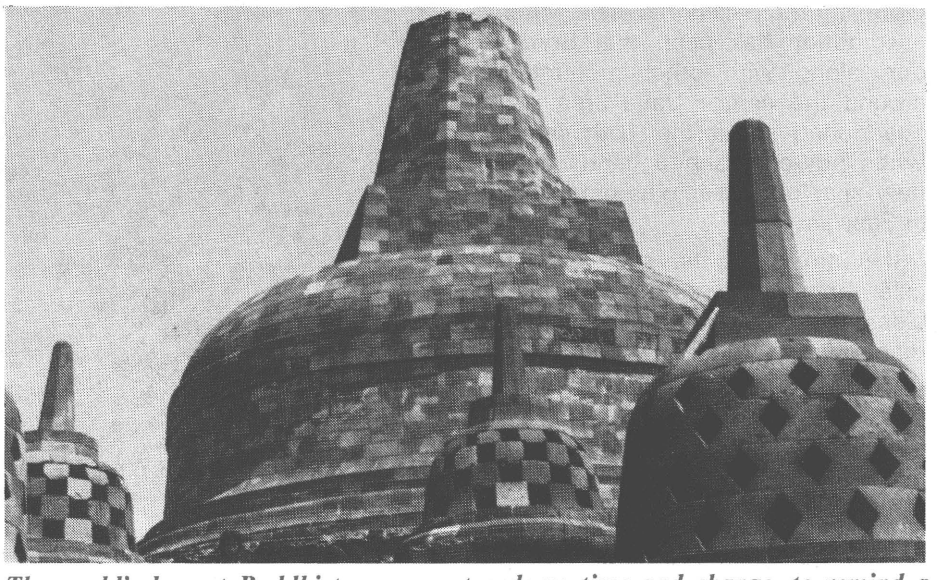
"UNICEF now believes," concludes the report, "that both social and scientific breakthroughs are at this point coming together to put into our hands the means of bringing about a revolution in child health. A serious commitment to that revolution by peoples and governments... could reduce child malnutrition and child deaths by at least half before the end of the 1990s." o

Borobudur: symbol of a syncretic culture[1]

by Yuli ISMARRONO

If spirits dwell in certain places, Borobudur is certainly one of them. About five years ago, Borobudur was a site on three fronts. The fourth side, where works had been completed, was astonishing enough: there were the historic interest, the artistic feeling, the remarkable balance of the whole and the splendour of the frescos, and beyond these, an impression of timeless mystery—that of faith and Borobudur is, first of all, an act of faith like European cathedrals and the mosques of Isfahan and Samarcand. The article below suggests this idea of ecumenical faith.

It should not be forgotten that the salvage of Borobudur is an example of what men can do when united in a fruitful cooperation. There will never be enough Abu Simbel and Borobudur to bring them together and that is why this article, which directly concerns neither Europe nor the ACP states, is published in this column. A. L.



The world's largest Buddhist monument endures time and change, to remind a predominantly Muslim Indonesia of its uniquely diverse religious and cultural heritage

The world's largest Buddhist monument endures time and change, to remind a predominantly Muslim Indonesia of its uniquely diverse religious and cultural heritage.

The completion of a ten-year project to restore the 1 200-year old Buddhist monument of Borobudur in central Java, Indonesia, was recently celebrated with great fanfare.

There was indeed cause to celebrate. At a cost of US$25 million and the efforts of a team of international experts that included archeologists, historians, seismologists and computer analysts, not to mention hundreds of local craftsmen, the world's largest Buddhist sanctuary was successfully rescued from collapse.

At stake was a pyramid-shaped complex of stupas made of 55 000 cubic metres of stone covering an area of about one and half hectares. Within the complex are some 500 statues, 276 of which are Buddha images and about 1 500 panels of exquisitely carved reliefs. For over one thousand years, Borobudur was neglected, almost to the point of oblivion, ravaged by time and such natural elements as volcanic eruptions, water and tropical vegetation. When restoration work was first begun, workers were faced with a heartbreaking scene of crumbling and cracked walls, reliefs covered with moss, statues with missing heads and arms, worst of all, a subsiding foundation.

Today, however, Borobudur stands renewed: each statue properly matched with its missing pieces and each relief beautifully exposing scenes of a great kingdom in the past. In the words of Dr Haryati Soebadi, Indonesia's director-general of culture at the completion of this gigantic project, "May Borobudur live for another thousand years".

The historical link

Situated near the confluence of the rivers Progo and Elo, and surrounded by four volcanic mountains, Borobudur has an aura of mystery.

During the centuries-long period of abandonment, Borobudur was associated with superstitious beliefs, particularly with bad luck and misery. According to the 18th century Javanese chronicles Babad Tanah Jawi (History of Java), the hill of Borobudur proved fatal to a rebel fighting against the king of Mataram in 1709. Yet another chronicle, the Babad Mataram (History of the kingdom of Mataram) tells of a prince of the Yogyakarta sultanate who died suddenly after visiting the Borobudur monument. Although misfortunes are no longer linked to Borobudur today, superstitions surrounding the monument nevertheless persist, in particular among nearby villagers.

About its history, no written documentation exists to indicate its construction nor any references to who had it built and why. Even the significance and origin of the name Borobudur is still a matter of debate. Only by comparing inscriptions on some of the reliefs with scripts used in royal charters of the eighth and ninth centuries did historians determine that Borobudur was probably founded around 800 A.D., a period known as the Golden Age of the Sailendra dynasty. It was during this brief century and a half reign that Buddhism was first introduced to Indonesia, and the only time in history that it ever flourished in Indonesia.

It is not exactly known how long Borobudur served as a centre of

(1) Europa May-June '83.

Buddhist pilgrimage, or when it ceased to function as a monument glorifying the Sailendras. The general assumption has been that Borobudur, along with other monuments around the central Java area were abandoned about the 10th century when power changed hands and a new seat of power was established in East Java.

It is remarkable that such a spectacular monument was ever built, considering the immense resources and manpower it required. And further taking into account that before and after the Sailendra dynasty, the predominant religion was Hinduism, its construction and the motives behind it are indeed a mystery. Most likely, when Buddhism was flourishing among the Javanese, they did not altogether shed Hinduism but rather adapted it. There is ample proof of this in the structural design of some parts of the Borobudur complex, which indicate that they might be more in tune with the ancestor worship associated with Hinduism than with Buddhist philosophy.

This accomodation of other elements to the more dominant set of beliefs is today, very much a part of the Indonesian way of life, particularly among the Javanese who comprise over half the total population. It is what C. Geertz in his book *The religion of Java* describes as "a basic Javanese syncretism, which is the island's true folk tradition". This syncretism can best be seen in the Javanese character. He might be a good Muslim, faithfully praying five times daily and regularly reciting from the Koran. But deep down in his heart he is more or less a Hindu-Buddhist, as well as imbued with a mysticism inherited from his yet earlier animistic ancestors.

The restoration and its significance

The significance of the extensive and expensive restoration, therefore, is manifold. There is no question that the main objective was to preserve a great cultural heritage. To Buddhists in Indonesia, the restoration of Borobudur, long regarded as sacred grounds, is an official recognition of their religion, particularly with the recent presidential decree making Buddhist holy day, *waisak,* a national holiday. The government has also permitted Buddhists to hold special ceremonies three times a year on the grounds of Borobudur.

"Each relief beautifully exposing scenes of a great kingdom in the past"

To archeologists and others involved in the preservation of Indonesia's historical monuments, the ten-year restoration has been quite a bonus. Cooperation with experts from the world over has opened new dimensions to the science of preservation. There are today about 40 chemical archeologists working in different parts of Indonesia, all of whom began their training during Borobudur's restoration project. Indonesia has also become the centre for studies of historical monuments among the ASEAN countries.

Less desirable but inevitable, considering the influx of tourism Borobudur will attract, is its commercialization. There already exist on the grounds of the monument, souvenir stalls and other similar business ventures. The government is further planning to build a 68-hectare national conservation park around the monument, requiring hundreds of villagers to relocate elsewhere. All of this, it is feared, will erode the spiritual and religious essence of Borobudur.

But to many people, the most significant aspect of Borobudur's restoration is symbolic of the Javanese syncretic view of life in general. Borobudur is seen as more than just an archeological and architectural feat. It is an expression of a way of life that has endured through the ages. Farmers today till rice fields in much the same way depicted in the monument's reliefs, and today's politics bear great resemblance to the complex power-plays shown in the reliefs as well.

The Borobudur monument itself may have lain forgotten and neglected for a long period of time, but the Hindu-Buddhism that it represented was never completely lost to the people's memory. Indonesia today is known as having the world's largest Muslim population, but many customs and traditions, some of which might be in conflict with orthodox Islamic philosophy, persist among the Javanese in particular. Indeed, the Javanese does not relinquish his tradition very easily. Thus the prevailing set of beliefs is a harmonious, if complex, mixture of Islam, Hindu-Buddhism and a sprinkling of mysticism.

Manifestations of this unorthodox belief can readily be seen everyday. The most important events in life—birth, marriage and death—are accompanied by certain rites and rituals which may be acceptable to Islam, but which have originated from Hindu-Buddhist and animistic lore. Besides prayers and Koran reading, for instance, there are numerous ways to ward off evil spirits or to ask the protection of the good spirits. When a child is born, he is welcomed with incantations of syukur (gratitude). When a couple marries, one of the most important ceremonies is the meeting of the bridal couple in front of the gaily decorated house of the girl. This is meant to introduce the newly-weds to the family's an-

"Only by comparing inscriptions on some of the reliefs with scripts used in royal charters of the eighth and ninth centuries did historians determine that Borobudur was probably founded around 800 A.D."

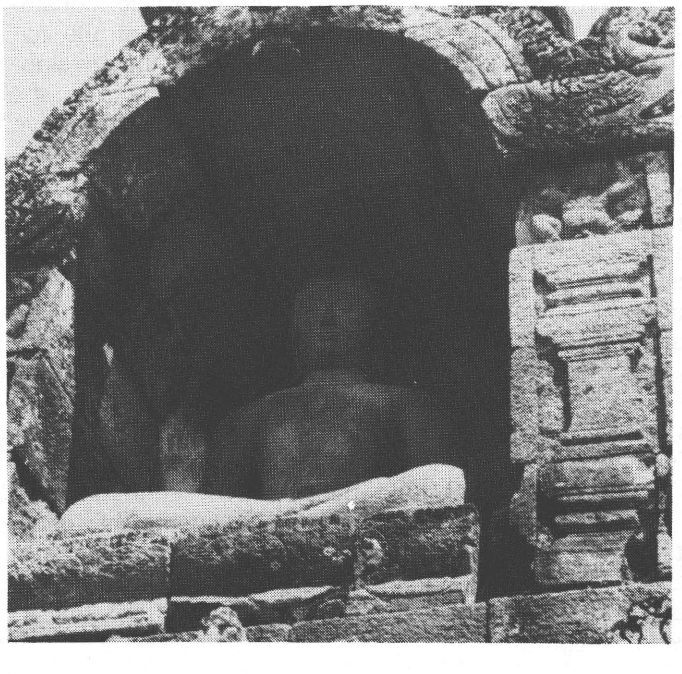
cestral spirits and to draw them into their protective circle. The communal purifying and laying out of a dead person is also usually accompanied by certain rites.

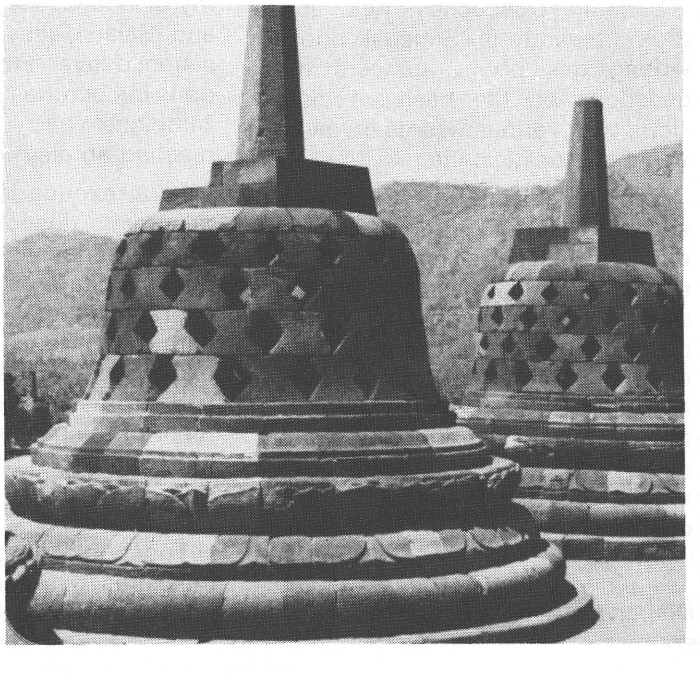
All these ceremonies are usually followed by selamatans, or devotional meals, shared with relatives, friends and neighbours. This uniquely traditional event is probably the most fundamental rite for the Javanese, a spiritual experiencing together which reinforces the communal bond inherent among men. A selamatan is held on the most diverse occasions: moving into a new house, a circumcision, after a bountiful harvest, during illness or preceding an important business venture.

Yet another link to the distant past of Borobudur's era, is the Javanese addiction to the wayang (puppetry) plays, with its characters mainly derived from the two Hindu epics of Mahabharata and Ramayana. Some people even identify wayang characters, whether heroes or villains, with themselves, emulating certain personality and religious traits. There is also the tendency to compare some auspicious events with similar ones in the wayang plays. The ancient prophecy of the coming of a Ratu Adil (king of justice) is still believed by many.

Thus the wayang is often seen as a symbolic representation of reality and as such has been the forum for many contemporary social and political issues.

Borobudur is therefore not only historically important, it is also a spiritual and cultural link between the present and the past. But it is unlikely that Indonesians will display outward homage to this magnificent symbol of their rich heritage beyond paying a visit once in a while, unlike the ceremonies and effusive offerings traditionally given to Buddhist monuments elsewhere. The homage the Indonesians will offer to this great monument of their past will be in their continuing adherence to beliefs that developed in that distant past but still form the basis of their everyday life. o





Christine DESOUCHES — **Le Parti démocratique sénégalais: une opposition légale en Afrique (The Senegalese Democratic Party: a legal opposition in Africa)** — Berger-Levrault 229, boulevard Saint-Germain, 75007 Paris — 237 pages — 1983

The formation in 1974 of the Parti démocratique sénégalais (PDS) challenged the monopolistic authority of what had been the *de facto* sole party, the Union progressiste sénégalaise (UPS) of President Senghor. It was also a test of the reality of democracy in Senegal and of whether this could be revived by a legally constituted and constructive opposition.

In the course of the past nine years, the PDS has formulated a political doctrine, defined a programme and established a strong organizational structure. It has scored definite successes and also had its share of problems, but, throughout, the party has maintained its stance as the legal opposition striving for fair government and seeking to change attitudes.

The elections of February 1983 showed that it continues to be Senegal's sole organized opposition party. Is this an isolated and passing phenomenon, exclusive to Senegal? Or, is it active evidence of a new era in Africa in which the situation of single political parties will be challenged?

Christine Desouches, who undertook research in Senegal prior to writing this book, answers these questions on the basis of discussions with various figures involved in Senegal's political life.

Born in Paris in 1946, Christine Desouches has taught in the department of political science at the University of Paris I, has worked for the Centre d'etudes juridiques et politiques du monde africain, is on the editorial board of the journal *Politique africaine* and the governing board of the Institut africain d'études stratégiques, and is the author of several articles on political change in African countries.

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Dharan GHAI and Samir RADWAN — **Agrarian policies and rural poverty in Africa** — International Labour Office, CH-1211, Geneva, Switzerland — 311 pages — £ 10.70 — 1983

Land is one of the root cause of the conflicts in several countries of Latin America where the horde of landless peasants are pitted against a few and often absent landlords. In Asia the situation is very much the same even if, for the moment, there are no signs of tension. In both Latin America and Asia the gap between the rich and the poor is glaring. What the peasants, however, are asking for is not an egalitarian society, but a piece of land to cultivate to feed their families.

Although the problem of land in Africa is in no way comparable to that of many Latin American and Asian countries, the authors of this book point out that the population of Africa is increasing rapidly and that, unless something is done to reverse the trend, the pressure will sooner or later create dangerous social polarizations, between a large landless and impoverished peasantry and an opulent bourgeoisie.

Nine case studies are carried out in this book: Kenya, Malawi, the Ivory Coast, Botswana, Zambia, Nigeria, Ghana, Mozambique and Somalia. The authors conclude that the problem of land is becoming so acute in some of these countries that, although paid agricultural workers play an important role in the rural economy of Ghana, the Ivory Coast, Kenya and Malawi, they are barely on subsistence level. Furthermore, rural exodus in countries like Botswana, Mozambique and Nigeria has now reached an alarming proportions.

Rural exodus is, of course, a widespread phenomenon in Africa. This is seriously affecting food production. State policies, however, are aggravating the situation, especially with regard to land tenure and public expenditure which tend to favour rich and large-scale farmers to the detriment of the peasants, who are largely responsible for feeding the nation.

The book suggests a number of measures to improve the efficiency of land. These include more equitable distribution of land, credit, germseeds, fertilizers etc. not only to large-scale farmers, but also to the mass of the peasantry.

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Yearbook of agricultural co-operation 1982 — the Plunkett Foundation for Co-operative Studies, 31 St Giles, Oxford OX1 3LF, England — 222 pages — 1983

For 56 years the Plunkett Foundation for Cooperative Studies has been publishing this yearbook. The series is aimed primarily at disseminating new ideas on co-operatives all over the world.

As 1982 was the 50th anniversary of the death of its founder, Horace Plunkett, two of the 20 articles that make up this volume are devoted to explanation of his philosophy. The remainder, written by people of different backgrounds and from various parts of the world contain important new ideas. They show, for example, ways in which agricultural co-operatives in the industrialized world can support their members in the face of changing food consumption patterns, reduced demand and food surpluses. They also show ways in which both the financing of co-operatives and the legal framework within which they work can be strengthened in order to assist co-operatives to meet the challenge of a changing environment.

Roger Spear, in his article, considers the possible causes of the failures of co-operatives in the developing countries. One of these is the imposition of western co-operative models on "people who live, think and act in a totally different environment".

It has been established that government-initiated or -assisted cooperatives are often hamstrung by government policy which does not correctly identify the needs of the people. The emerging idea of "movement-to-movement" assistance may provide an answer. This should be effective, although care should be taken to ensure that models that do not fit the recipient cooperatives are not exported in the process. This is a good book that all

INDUSTRIAL OPPORTUNITIES

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CID

CID's INDUSTRIAL INFORMATION SERVICE

INFORMATION TO GENERATE IDEAS AND SOLVE PROBLEMS

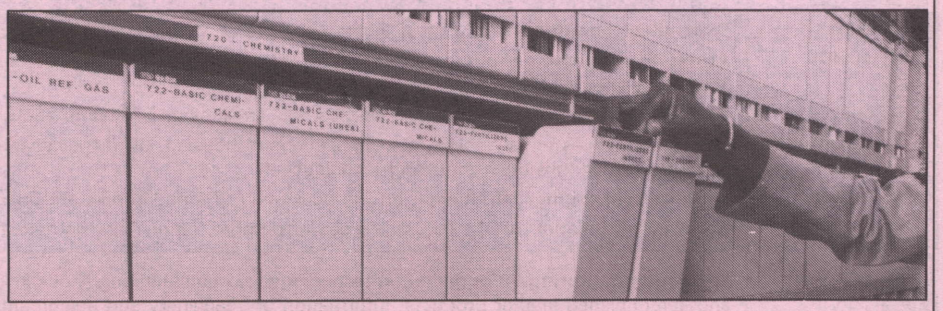
"Industrial Opportunities" carried an article (November 1982) on the facilities offered by CID's information service. We have since reviewed the major technical information requests handled during the first six months of 1983 and have been able to make some preliminary observations about the role of our information service and those who use it. It should be pointed out that this service is primarily intended for small and medium sized enterprises in ACP countries.

During the six months covered by this review, the information service answered 112 major enquiries from 37 ACP countries. These enquiries fall into three categories:

- requests for information about adapted technologies;
- requests for the addresses and brochures of EEC suppliers of raw materials and equipment, and of companies which can provide know-how for a particular manufacturing process;
- requests for specific technical/economic information.

The first category covers the basic information contained in CID's "Inventory of Adapted Technolgies" as well as appropriate technologies recommended by international organizations or specialized bodies.

The second category represents a large proportion of the activities of the service. This is because ACP industrialists need to be in constant contact with EEC enterprises able to assist with industrial projects in ACP countries.



CID's documentation service naturally uses the traditional sources of documentation (see photo). But it also employs more sophisticated tools such as the bibliographic online data bases available through CID's computer terminal.

The third category involves in-depth searches for information. In response to a question relating to a specific technology, CID will provide the most up-to-date information with recommendations about how the technology can be adapted to ACP needs. CID will also provide information on the variety of technical solutions to a particular problem. CID also provides economic data, such as demand statistics to permit analyses of a potential market.

In undertaking such detailed information searches CID naturally uses the traditional sources of documentation. But it also employs more sophisticated tools such as the bibliographic online data bases available through CID's computer terminal.

The examples shown in the table (see page 2) are typical of questions dealt with during the first half of 1983. They also serve to illustrate the breadth of the technical fields which have been covered and the geographical distribution of requests throughout ACP countries.

This review along with the increasing number of requests for information coming in, enable us to make some observations regarding the people who request informa-

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Continued from page 1

tion, the procedure they use, the purpose of the information service and the role of technical information in the implementation of industrial projects.

- The information we provide is aimed primarily at ACP industrialists who cannot benefit from such sources of information in their own countries.
- The requests are sent either directly to the Director of CID by letter or by telex, or through the ACP Brussels embassies, or via ACP financial organizations, or they may come through ACP ministries or CID antennae.
- The purpose is to provide technical information relating to:

— enterprises and their activities, in order to facilitate contacts between ACP and EEC enterprises;
— existing technologies, adapted or recent, in order to make the enquirers aware of their existence and to allow them to evaluate such technologies and to generate innovative ideas based on these technologies which will make use of local resources;
— production and markets in connection with a potential project;
— technical data, needed to help define a project under evaluation.

In the long process of implementation of an industrial project, information can play an important role at the beginning of the process, particularly when the decision to start up the project depends on the evaluation of the technology and of its suitability to local requirements.

CID's INFORMATION SERVICE JANUARY-JUNE 1983: EXAMPLES OF INFORMATION PROVIDED

	COUNTRY	INFORMATION PROVIDED
WEST AFRICA	GHANA	**Fruit juice manufacturing.** List of Italian suppliers of machinery for small-scale spaghetti plant.
	GUINEA	**Agricultural waste.** Adapted technology profiles relating to the manufacture of briquettes from agricultural waste and to starting up a small foundry.
	MALI	**Dairy equipment.** List of European suppliers of small-capacity churns and skimmers.
	MAURITANIA	**Polyester.** Polyester technology for applications in housing, building, fisheries, agriculture. Specifically: filament winding and compression and injection moulding techniques.
	NIGERIA	**Long-life packaging.** Information on the packaging of long-life milk and fruit juice.
	SENEGAL	**Paraffin.** Information on the industrial uses of paraffin, other than the manufacture of candles.
EAST AFRICA	ETHIOPIA	**Shoe manufacturing.** Information on technology for manufacturing shoes in leather, canvas or plastic material, and on finished and semi-finished leather products. Information on machinery and equipment suppliers.
	KENYA	**Papyrus.** Information on the papyrus plant: conditions for growth and growth rate, reproductive cycle and method, characteristics of different varieties. (The information was required for the purpose of setting up a project for making fuel, in the form of briquettes, from papyrus).
	LESOTHO	**Market information.** Information on the European market for knitted woollen garments : production, consumption, imports by volume and value, average prices.
	MADAGASCAR	**Aquaculture.** Information on industrial-scale aquaculture.
	MALAWI	**Solar heating.** Information on solar energy and wind pumps, for use in the manufacture of fish meal.
	MAURITIUS	**"Puffed corn" biscuits.** Technology, raw materials and EEC suppliers of equipment.
		Manufacture of dehydrated soups. Information regarding the technology for manufacturing dehydrated soups and packaging them.
	SUDAN	**Asbestos.** Information on asbestos and asbestos-substitutes in construction. European regulations covering asbestos.
CENTRAL AFRICA	CAMEROON	**Cassava processing.** Technology relating to processing cassava into cassava flour, and details of some EEC suppliers of appropriate equipment.
	CAMEROON	**Fuel from agricultural waste.** Information on processing agricultural waste into solid or gaseous fuel (biomass).
		Waste recycling. Information on the collection and recycling of household waste.
	CONGO	**Aerosol cans.** Technology required to make aerosol cans for insecticides plus EEC suppliers of equipment and know-how.
		Hygienic paper. Information and techniques for cutting, packing and distributing paper for sanitary uses (toilet paper, tissues, paper napkins). Lists of EEC suppliers of know-how and raw materials.
	GABON	**Talc.** Technology relating to the use of talc in the ceramic industry.
	RWANDA	**Synthetic resins.** Profile of an adapted technolgy for making wash basins from synthetic resins and marble powder.
	ZAIRE	**Charcoal.** Profile of an adapted technology for producing charcoal.
PACIFIC	FIJI	**Female underwear.** Technology for cutting and sewing womens' underwear; information on the raw materials used and on EEC suppliers of appropriate equipment.
		Hydroponics. Technology for growing market garden produce — lettuce, fresh vegetables—without soil, or hydropnically.
	TONGA	**Chicken breeding.** Information regarding day-old chick breeding.
	WESTERN SAMOA	**Solar driers.** Information on solar wood-drying kilns for furniture manufacture.
CARIBBEAN	ANTIGUA	**Cattle feed.** Information on converting groundnut refuse into cattle feed.
	GRENADA	**Manufacture of cosmetics.** Technology for dehydrating plants and seaweed for the cosmetics industry, by vacuum freezing.
	JAMAICA	**Potato processing.** Technology for processing potatoes into potato crisps/frozen chips; and for canning potatoes. Information on markets and EEC suppliers of know-how and equipment.
	SURINAME	**Market information.** Information on markets for certain agricultural products: rice, palm oil, cherries, pineapple.
	TRINIDAD & TOBAGO	**Market information.** European markets for steel wire rods.

PROMOTION ATTACHE PROGRAMME

GUINEA AND MADAGASCAR NOW ENCOURAGE PRIVATE INDUSTRY

Industrial promotion specialists from CID antenna organisations in Guinea Conakry and Madagascar have been based at CID in Brussels since September (under (CID's) promotion attaché programme). They will remain in Brussels until the beginning of December to further promote the industrial projects described below. EEC companies interested in any of these projects may contact CID for further details.

Guinea and Madagascar are both socialist countries but both have recently decided to openly encourage private investment, whether local or foreign, in small and medium-sized enterprises. The range of enticements includes: import duty relief for raw materials, machines and spare parts; tax relief; guaranteed rights for foreign investors to transfer profits and investments; assurances that nationalisations will not take place; the provision of free or rented sites.

GUINEA PROJECTS

Abdowaye Diallo is promoting five projects on behalf of local entrepreneurs. He holds the position of Director of the Bureau d'Etudes et Suivi at the Ministère des Petites et Moyennes Entreprises et de l'Artisanat.

For all five projects he is mainly seeking technical partners and says that the local partners are able to meet all local costs. His Ministry can provide foreign exchange for equipment.

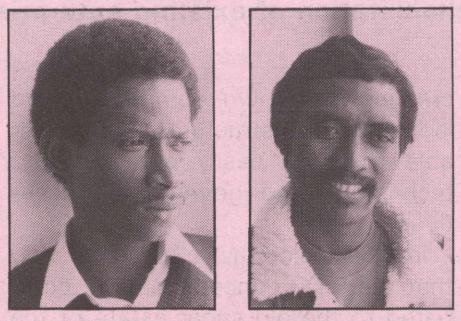
Guinea's main assets are its minerals (principally bauxite, iron ore, diamonds and gold); and its agricultural resources, particularly cattle, goats and poultry. The National Development Plan encourages the production of goods in constant demand such as soap, building materials, processed or preserved food. The projects he is promoting come under this priority category. They are:

— sawmills and furniture workshops (two projects),

— Factory to make cement-based tiles,

— project to modernise an existing soapworks,

— establishment of a chicken breeding unit.



The promotion attachés from Guinea and Madagascar: Abdoulaye Diallo (left) and Pascal Rakotondrazay (right).

PROJECTS IN MADAGASCAR

Pascal Rakotondrazay is attached to an industrial development organisation known as SERDI (Société d'Etudes et de Réalisations pour le Développement Industriel). His personal specialisation is in the agro-food sector.

He is looking for EEC technical and financial partners for three projects. The EEC partners should preferably be prepared to take a share of the equity and to help with training, with start-up and with the preparation of a feasibility study. He is promoting the following projects:

- Milk products derived from reconstituted milk and natural fresh milk. The envisaged investment is US $ 1 million. This project is mainly aimed at the production of 400 tonnes of butter per annum in one shift.
- Manufacture of baby food based on maize and bananas. Envisaged capacity: 3,000 tonnes per annum in three shifts. Estimated investment: US $2 million.
- Mosquito coils. The envisaged investment is US $600,000.

Madagascar's main resources are in agriculture and valuable foreign exchange is earned through exports of coffee, vanilla and cloves. The main mineral exports are chrome, marble and bauxite and it is expected that production of oil and uranium will begin over the next few years. ■

PROJECT PROMOTION WORKSHOP

PACIFIC OPPORTUNITIES FOR EUROPEAN INDUSTRY

CID's workshop to promote potential EEC/ACP joint ventures in the Pacific region was discussed in the September/October issue of "Industrial Opportunities". Details of 23 projects have since been circulated to 200 industrial companies in the EEC.

Favourable responses at the time of going to press have already been received from the United Kingdom, France, Belgium, Italy, Germany, Denmark and Ireland. On the strength of these initial replies CID is expecting that some 20 European industrialists will make the journey to Vanuatu for the promotional workshop to be held in the Intercontinental Hotel, Port Vila, on 28 and 29 November. CID will contribute to the travel costs of EEC industrialists who attend.

In addition to the 23 projects already circulated, CID has a list of further proposals put forward by the Pacific ACP sponsors.

EEC companies are also being encouraged to bring their own offers of joint ventures with them so that meetings may be arranged with ACP businessmen to establish new enterprises in the region.

Following the workshop in Vanuatu arrangements will be made to enable EEC industrialists to visit the factories of sponsors throughout the region. This will enable them to familiarise themselves with the facilities and working conditions available from their potential partners and to discuss projects with the banking sector and government authorities.

Because of the importance of the Australasian market to the ACP Pacific States, a number of official and commercial interests in Australia and New Zealand have been invited to the workshop. It is hoped that some tri-partite (ACP/EEC/Australasian) ventures will be arranged as a result of this initiative. This meeting has the support of SPEC (the South Pacific Bureau for Economic Cooperation) which is based in Fiji. ■

SADCC COUNTRIES AND CID

CID FOLLOWS UP SADCC INTEREST IN INDUSTRIAL DEVELOPMENT

A CID mission recently visited four of the member countries of the Southern African Development Coordinating Conference (SADCC). The mission included a visit to the SADCC Secretariat in Gaborone, Botswana. The object was to support the interest indicated by these countries in increased industrial development; but also to build up the number of CID interventions in SADCC countries, in particular for the rehabilitation of existing enterprises and for rural industrial development.

RURAL INDUSTRIAL DEVELOPMENT CONCEPT AROUSES INTEREST

Organisations in all four countries took a particular interest in CID's concept for Rural Industrial Development Enterprises (RIDE). This concept could help to better integrate rural industrial development into the urban development of these countries.

The RIDE concept entails the creation of central production facilities of some size, such as abatoirs, feed mills and mechanical workshops. Such central facilities would permit the training of technicians who could spread out to the surrounding rural areas to start up satellite industries. The satellite industries thus created would benefit from the output of the central facility. The central facility could also provide them with services like management, transport and marketing.

During the mission, CID Director Jens Mosgard addressed a Rural Industrial Development Conference (in Zimbabwe) on the RIDE concept. He said that small scattered and isolated industries suffer from a lack of the industrial and commercial environment needed to facilitate the provision of services and raw materials. They also experience difficulties in getting access to credit, in reaching markets and in obtaining government incentives. Aid to such industries often includes the provision of costly extension workers.

Mr. Mosgard told the conference that RIDE could overcome some of these negative factors because it would permit a number of small rural industries, built around a central facility, to enjoy the advantages of bigger firms by being more efficient, by creating their own commercial and industrial infrastructures, by being able to more easily obtain credit, technology and government incentives.

In conclusion, Mr. Mosgard said that the RIDE concept may be compared to the old sugar estate or the old colonial company whose branches were under the strict control of a strong headquarters and which were operated very efficiently production-wise. However, he said that the weakness of the old companies was that they "did not encompass any development for the outlying stations or branches which were given little training and authority to enable them to eventually become self-sustaining units and nuclei for further development".

CID informed a number of organisations visited during the mission that it is prepared to provide expertise to draw up detailed plans and to identify partners, for projects based upon the RIDE concept. CID may also help to locate technical assistance over and above what it can itself provide.

SADCC INDUSTRIAL DEVELOPMENT

The CID mission visited Mr. A. Blumeris, Secretary General of SADCC, who is based in Botswana.

SADCC has issued three volumes of pre-investment analyses for a number of projects earmarked for each SADCC country. CID is prepared to take action based upon any such analysis provided that a local promotor/investor—either private or parastatal—has been identified.

CID undertook to follow-up the SADCC initiatives through a visit to SADCC's Industrial Unit which is based in the Ministry of Industry in Tanzania. At the time of going to print it was envisaged that this visit would take place in October by John Magombo, Manager of CID's Industrial Studies Division. Follow-up will also take place through the sectoral promotion meeting described below.

SECTORAL PROMOTION MEETING FOR SADCC AND EAST AFRICAN COUNTRIES

It may be possible to promote some of the projects identified by SADCC consultants at the CID meeting for agro- and food-based industries planned for early June 1984. This meeting will focus on projects in East and Southern Africa.

CID will recruit consultants who will visit East and Southern African countries to substantiate further projects for the 1984 meeting and to identify local promoters. CID will invite a few local promoters from each country to come to Brussels for the meeting, to personally promote their projects.

ASSISTANCE TO BOTSWANA

The mission visited two CID-assisted projects in Botswana. One project, making steel furniture, came into being following a CID-funded visit to Europe for the General Manager. He attended CID's first project promotion meeting for the metal-working sector in 1982 and afterwards visited several factories where he picked up the ideas he needed and found a source of finance. His factory has been in production since January 1983.

The other project is run by the Bot-

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swana Technology Centre which received assistance for research into biogas applications. It is hoped that first test results will be available before the end of 1983.

REHABILITATION IN MALAWI

Apart from rural industrial development, the greatest potential for further CID involvement in Malawi lies in assistance with the rehabilitation of existing industries. CID is prepared to help diagnose the problems of individual companies and to offer direct technical assistance with rehabilitation and expansion.

ZIMBABWE'S POTENTIAL

Although the visit to Zimbabwe was primarily aimed at a meeting of CID's antenna organisations, it detected indications that industrialists in Zimbabwe are now showing stronger interest in cooperation with EEC firms. An encouraging World Bank report has said that Zimbabwean industry may be competitive on a world scale in several sectors which include food, textiles, pharmaceuticals, agricultural implements and domestic appliances.

The mission got the impression that Zimbabwean industrialists would be interested in CID assistance, to obtain new partners and new technology for existing industries, in order to introduce new product lines and new export markets.

HOW LESOTHO CAN BENEFIT

Although Lesotho may be facing great constraints because of its geographic location and limitations in resources, there is still a number of existing projects that can benefit from CID rehabilitation and training assistance.

There are also new projects being considered by the Lesotho National Development Corporation that can interest European financial and know-how partners.

Planned visits by CID consultants to identify and substantiate agro- and food-based industrial projects for the 1984 project promotion meeting, should also generate a number of projects for which CID can provide assistance. ■

CID ADVISORY COUNCIL

ADVISORY COUNCIL MEETS TWICE IN 1983

Some members of the CID Advisory Council during its eighth meeting. Left to right: W.A. De Jonge (Netherlands), R. Constantine Karemani (Uganda), Z.C.I. Makoni (Zimbabwe), Alan McGarvey (U.K.).

During 1983, CID's Advisory Council held its seventh and eighth meetings under Lomé II. The Council was established under the Lomé Convention to advise CID on its operations. Its members are chosen for their personal knowledge of industry, particularly of manufacturing industry. They come from EEC member states and from all ACP regions.

At it seventh meeting, held on 28 April 1983, the Council examined CID's Annual Report for 1982. It expressed the view that CID "had developed a considerable volume of work in 1982 and had exerted a particular effort to improve its activities".

REHABILITATION OF EXISTING INDUSTRIES

At its eighth meeting on 5 September 1983, the Council favorably considered CID's draft work programme and draft budget for 1984. It also looked back in detail at CID's activities during the first half of 1983 and reviewed the likely results for the second half of the year.

One of the opinions expressed by the Council during this meeting, was that assistance with the rehabilitation and expansion of existing ACP industry is a key activity to which CID should give great priority. The Council felt that such assistance may bring about quick results especially where a bottleneck may be overcome by offering short term expertise and technical assistance. Moreover, the Council advised CID to concentrate on in-plant training for key posts to achieve maximum results for a reasonably small financial outlay.

The Council also supported increased travelling of CID staff in connection with specific interventions, to complement the activities of the CID antennae in ACP countries.

NEW FACES

At its seventh meeting the Council was joined by two new members: Mr. W.A. De Jonge of Philips N.V. (Netherlands) and H.E. Mr. Maurice St. John, Ambassador of the Republic of Trinidad and Tobago to the EEC. At its eighth meeting the Council was joined by three more new members: Mr. Z.C.I. Makoni, Deputy Secretary of the Ministry of Industry and Development, Zimbabwe; Mr. R. Constantine Karemani, Vice-Chairman of the Uganda National Chamber of Commerce and Industry; H.E. Mr. Sonatane Tu'a Taumoepeau-Tupou, Ambassador of the Kingdom of Tonga to the U.K.

NEW CHAIRMAN

Also at its eighth meeting the Council elected Mr. Michel Delefortrie of Belgium as its Chairman for the coming year and Mr. K. Lazare Soré of the Republic of Upper Volta was elected as Vice-Chairman.

Mr. Delefortrie has been a member of the Council since its inception and has previously held the office of Chairman. He is Executive Vice-Chairman of a large Belgian company.

Mr. Soré is Director of a tyre firm in Upper Volta. ■

MAY-AUGUST 1983

ACTIVITIES IN THE FIELD

A summary intended to demonstrate the range of assistance which CID can provide.

NEW INDUSTRIES

• **Cameroon.** *Integrated feedmill and poultry project.* Work on a feasibility study co-financed by CID, started in August 1983. The project has two private local sponsors and German and French joint venture partners. It will cover the production of maize and soya, a feedmill, and a chicken farm. It is also planned to include the growing of tomatoes and the production of tomato concentrate for the regional market.

• **Djibouti.** *Egg production.* A protocol of agreement to establish a joint venture was signed and the new company will be incorporated in October 1983. Animal production will be 6 million eggs, with a possible increase to 15 million. The equipment will be shipped before end 1983 and construction will start during the first quarter 1984.

• **Kenya.** *Parent chickens and vaccines.* A study co-financed by CID and the UK joint venture partners is under way.

• **Kenya.** *Manufacture of solar collectors.* Following the signing of a joint venture agreement in May 1983 and the subsequent incorporation of a joint company, production of solar collectors for water heating is now starting up. An engineer provided by the Belgian technical partners is assisting the company to adapt the production technique to local conditions and to train workers. Part of the cost of this engineer is being covered by CID. The Kenyan Government supported the project by abolishing duty on imported materials.

• **Malawi.** *Vegetable dehydration.* In August 1983, a Dutch firm and CID signed a contract for the carrying out of a feasibility study. The project is sponsored by a local organisation which operates several large farms.

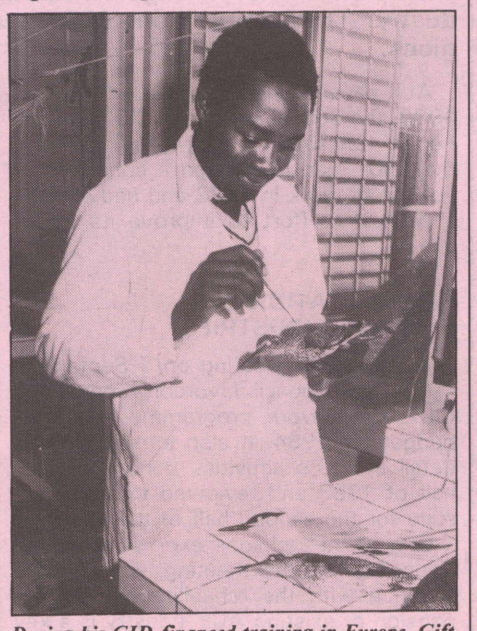
• **Malawi.** *Lubrication oil recycling.* A pre-feasibility study undertaken by German consultants in 1978 was up-dated by CID in June 1983 for reconsideration of the project by the local sponsors who now include the major oil companies operating in Malawi.

• **Senegal.** *Optical glasses.* The feasibility study (co-financed by CID) has been completed and a protocol of agreement signed between the Senegalese and Belgian partners. The proposed workshop will produce optical glasses for the lower income groups.

• **Senegal.** *Animal feed and poultry.* This project is the result of CID's promotion meeting for ECOWAS countries held in 1982. The joint venture company has been incorporated. The German and Belgian partners are each taking 20 % of the equity. The Belgian partner is already sending out day-old chickens for this project.

• **Swaziland.** *Fruit processing.* Following the completion of the feasibility study with financial assistance from CID, a meeting was held in June 1983 in France between the Swaziland sponsors, the French and Luxembourg joint-venture partners, the "Crédit Commercial de France" and CID. A joint venture agreement based on CID's model agreement was signed. The purchase of plant and equipment in France is being financed by a French buyer's credit guaranteed by COFACE. French experts are helping to establish the nursery for the project. It is an export-orientated project.

• **Swaziland.** *Asbestos cement building components.* A German group is carrying out a feasibility study and regional market survey with financial support from CID. The project is sponsored by the Swazi Government (through NIDCS) with the aim of providing new outlets for Swaziland's only asbestos mine which is a major foreign exchange earner. CID will co-finance a second study on a parallel project for the manufacture of asbestos textiles for protective clothing.



During his CID-financed training in Europe, Gift Moyo (Director of Zim Taxidermy PVT Ltd.) spent a period with the Taxidermy and Display Department of the Institut Royal des Sciences Naturelles de Belgique, where he learned new ways to mount game trophies using local Zimbabwean raw materials instead of imported resins. Our photo shows him during training, while preparing mounts of game birds. While in Europe he was able to find new cheaper suppliers of raw materials. He also learned how to reduce tanning time for gameskins with a view to improving his business operations at home. (This project is listed under Training on page 7 opposite).

• **Uganda.** *Charcoal production.* A feasibility study was undertaken with technical assistance from CID in 1983. The technical partner was identified and small-scale equipment was selected, in July 1983. The project is sponsored by a private businessman and the Uganda Development Bank (UDB) and will be financed under an IBRD line of credit to UDB.

• **Uganda.** *Mini-brick plant.* The study for a model small-scale brick plant was completed with CID assistance. Quotations for machinery and equipment have been received. Purchases in foreign exchange will be financed out of an OPEC line of credit to UDB. Six such plants are planned for Uganda.

• **Upper-Volta.** *Metal workshop.* CID is financing for a period of six months a Belgian engineer to start up a diversification programme of an existing metal workshop. Two Belgian firms have taken up an equity shareholding, together with a Senegalese firm which will use the Upper Volta workshop to market agricultural tools and machines made in its Dakar factory. The project is part of a regional production and marketing link-up which will include Senegal, Upper Volta, Mauritania, Mali and The Gambia.

• **Upper Volta.** *Maintenance workshop.* A feasibility study on the setting up of a workshop for the maintenance and repair of cars and trucks is at present being undertaken by the future Belgian joint venture partner. Several garages along with the "Office de Promotion des Entreprises Voltaïques" (OPEV) are sponsoring the project locally.

• **Upper Volta.** *Biscuit factory.* CID is co-financing a feasibility study which is currently being carried out by the EEC partner. This study is also being co-financed by PROPARCO.

• **Vanuatu/Western Samoa.** *Activated carbon.* Together with the Governments of Vanuatu and Western Samoa, CID is financing production trials for activated carbon from coconut shells originating in these two countries, as well as market tests in several European countries. The tests follow on from a feasibility study undertaken with CID support in 1982.

• **Zaire.** *Boat yard, Lake Tanganyika.* Implementation started in August 1983, following EDF's agreement to give technical assistance and SOFIDE's decision to provide a loan for equipment. CID located the UK joint venture partner, financed the feasibility study and is currently providing start-up assistance.

REHABILITATION OF EXISTING INDUSTRIES

- **Burundi.** *Cargo and fishing vessels.* A fishing vessel, converted with CID technical assistance to operate with modern trawling equipment, is now being commissioned on Lake Tanganyika. Another ship, salvaged by a promoter from the bottom of the lake, is being modernized and re-engined for bulk cargo trade on the lake.
- **Cameroon.** *Furniture.* Production improvements and the introduction of new lines have been brought about with CID help.
- **Grenada.** *Perfume and cosmetics.* Production of existing lines is being increased and new products introduced, following an expert study; and cooperation with EEC suppliers of cosmetic technology is being undertaken.
- **Kenya.** *Paper board production.* A study on the possibilities of increasing the product range is being followed up by technical assistance and training, financed by CID.
- **Malawi.** *Malawi Portland Cement Co. Ltd.* An investigation was carried out in August 1983, by the future Irish technical partner, on the potential for the reorganization of Malawi's only cement plant at Changalume. Recommendations include a survey of the limestone reserves and a significant capital investment programme.
- **Sudan.** *Quarry extension.* CID located at Irish firm which undertook a study on the modernization and extension of a stone quarry near Khartoum. The Irish firm will provide a quarry manager, and new equipment will be purchased.
- **Vanuatu.** *Abattoir.* A study of the production of meat and meat products, diversification and markets, was carried out with the help of an expert. The recommendations are being studied.

TRAINING

- **Mauritius.** *Textile printing.* Two technicians were trained with a firm of textile printers in France.
- **Solomon Islands.** *Soft drinks.* Training was provided in Papua New Guinea for three technicians, in the production of cordials and carbonated drinks.
- **Sudan.** *Flour milling.* An expert was sent out in August to provide in-plant training for operators producing high quality flour from sorghum.
- **Tanzania.** *Bottle closures.* Training was provided overseas for two technicians, in the operation of machines for the production of bottle closures.
- **Uganda.** *Tanning.* Three leather workers were given practical training in modern tanning methods in Germany, Holland and the United Kingdom.
- **Trinidad & Tobaco.** *Cooker manufacturing.* CID arranged for the training of six key personnel in production methods for cookers, in Holland, Italy and the United Kingdom.
- **Zimbabwe.** *Taxidermy.* A taxidermist received training in Germany, Holland and the United Kingdom, in the techniques of preparing and tanning gameskins. He also received training in a Belgian museum, in the mounting of stuffed animals. (See photo on page 6.)

OFFERS FROM EEC FIRMS

ACP ENTREPRENEURS PLEASE REPLY

ACP entrepreneurs are invited to contact CID, quoting the reference number, in response to any offer outlined in this section. ACP entrepreneurs must supply CID with background information about their industrial and commercial activities. They must also provide a short assessment of the viability of the proposed project, giving details of the potential market.

Organisations reprinting these offers in their own publications, are asked to ALWAYS include the CID reference numbers.

Wants to set up production of broiler chickens

Belgian offer — **Ref. 83/84a**

A Belgian company is open to a joint venture agreement with a view to establishing a broiler chicken unit. The total plant would have an annual output of 350 000 broilers. This would represent approximately 490 000 kg of live meat.

The total estimated investment is US $1 200 000.

Plastic pipes and crates

Dutch offer — **Ref. 83/85a**

A Dutch company is interested in getting in touch with ACP sponsors to manufacture, possibly on a joint venture basis, plastic pipes / fitting systems and plastic crates.

Estimated investments:

- for pipes/fitting systems: US $1.25 million for an output of 1.500 tons a year
- for crates: US $1.5 million for an output of 500 000 units a year.

Production of dry batteries

Danish offer — **Ref. 83/86a**

A Danish firm is interested in setting up a project for the production of dry batteries. The production capacity is about 8 million units per year for an estimated investment of about US $ 1 250 000.

The Danish company can consider a joint venture agreement.

Wood-based building components

Danish offer — **Ref. 83/87a**

A Danish company wishes to get in touch with ACP companies to manufacture wood-based building components (roof trusses, floor, wall and roof components) for both private housing and public buildings such as factories, offices, schools, health centres, etc. It is expected that there would be optimal utilisation of local raw materials.

The Danish company is open to joint venture agreements, licensing arrangements, sale of know-how, or the provision of turn-key operations (hardware and/or software).

The project requires a plot of 10 000-15 000 m^2 and a covered production area of 2000-4000 m^2. Capacity: prefabricated components for approximately 300-500 houses per year (of 60 m^2 each).

Investment in production machinery and equipment is expected to be US $0.5 million.

Plastic sacks, wraps and bags

Irish offer — **Ref. 83/88a**

An Irish company is interested in producing in ACP countries the following products from polyethylene film:

1. Heavy duty sacks (printed) for fertilizers and other products. 6 000 000 units/year for an estimated investment of US $1 765 000.
2. Shrink wrap. 300 tons/year for an investment of about US $ 176 500.
3. Light gauge bags. 300 tons/year for an investment of about US $ 235 000.

However, the capacity and cost for the last two items are very dependent on product/size/range. The company is open to joint venture agreements.

ADAPTED TECHNOLOGY

A SINGLE PLANT TO PROCESS MANY KINDS OF FRUIT

A plant now available from a Danish company can produce juice/pulp from mangoes, tomatoes, guavas and yellow passion fruit. Each fruit has its own season; and the advantage of a plant like this, which can process various types of fruit, is that one can obtain continuous production throughout the year. This adds to profitability.

This plant is containerized and has a capacity of 800 kilos pulp/juice per hour. This is equivalent to approximately 1,500 kilos fresh ripe mangoes. The fruit is washed, processed and pasteurized. The end product can either be preserved or aseptically placed in containers for transportation to existing domestic or foreign plants, for packing, etc.

This small-scale containerized factory can be placed on a trailer and transported from place to place according to the season, the quantities of available fruit and the growing areas.

In areas with an insufficient supply of electricity, the plant can be run by a generator. In order to save energy, the cooling process (after pasteurization) is based on water. Where there is no public water supply, river water can be used.

The main advantages which this plant offers, may be summarized as follows:

- Small total investment.
- Savings on construction costs.
- No need to transport raw fruit which only results in an unavoidable deterioration in quality; and the plant also saves on direct transportation costs.
- The plant can be moved from place to place as season and supply dictate.
- Continuous production throughout the year.
- Flexibility in the types of fruit which can be processed.

The following ancillary equipment can be installed in addition to the basic juice/pulp processing plant: aseptic equipment for filling containers with juice/pulp (for either bulk deliveries or local consumption); equipment to make fruit juice concentrates; cooling/freezing equipment for the juice/pulp; processing equipment for the production of marmalade and jams.

The basic equipment can also be used for processing other types of fruit such as pineapple, various kinds of oranges and apples.

A factory based on this adapted technology has been installed in Zaire where it has been operating successfully since last year. The Zaire factory required a total investment of US $ 500 000.

The Danish company is, in principle, prepared to take a minor investment in projects based on this technology.

ACP sponsors are invited to contact CID for further details of any technology outlined in this section. CID can help with implementation.

EEC industrialists who have developed adapted technologies can benefit from CID's services for the promotion of their technologies in ACP countries. ■

OFFERS FROM ACP SPONSORS

EEC INDUSTRIAL PARTNERS WANTED

EEC industries are invited to contact CID, quoting the reference number, in response to any offer outlined in this section. CID will answer questions on any item and will indicate the kind of assistance it can provide. EEC industries should give a brief description of their operations; and, in relation to the proposed project, they should state the kind of involvement which they envisage.

Organisations reprinting these offers in their own publications, are asked to ALWAYS include the CID reference numbers.

Experienced entrepreneurs wish to set up production of melamine table ware

Nigeria — **Ref. 83/82a**

Private entrepreneurs with extensive business interests in Ondo State wish to set up production of melamine table ware. The products would include serving dishes, plates, bowls, cups and saucers for the local market. A preliminary study for this project has already been completed.

The anticipated minimum capacity is 422 400 units per year.

The sponsors are seeking EEC joint venture partners who will contribute to the financing of the project and provide technical know-how.

Foundry and machine shop wants to develop new product lines

Jamaica — **Ref. 83/83a**

An existing foundry and machine shop manufacturing castings for use in sugar mills and other industries, is looking for *an EEC partner willing to invest in the company and to provide technical assistance.* The intention is to upgrade the existing plant and to maximise the utilisation of existing spare capacity by developing new product lines. This may involve purchasing steel and alloy iron casting machinery.

The company currently employs 126 persons and has an annual turnover of J$ 5.8 million of which export sales to the region represent 15 %. ■

OPERATIONAL SUMMARY

No. 19 — November 1983

(position as at 17 October 1983)

EEC-financed development schemes

The following information is aimed at showing the state of progress of EEC development schemes prior to their implementation. It is set out as follows:

Geographical breakdown

The summary is divided into three groups of countries, corresponding to the main aspects of Community development policy:

— the ACP countries (Africa, the Caribbean and the Pacific), which signed the multilateral conventions of Lomé I (28 February 1975) and Lomé II (31 October 1979), plus the OCT (overseas countries and territories) of certain member states of the EEC, which get the same type of aid as the ACP countries;

— the Mediterranean countries (Maghreb and Mashraq), which signed cooperation agreements with the EEC in 1976 and 1977;

— the non-associated developing countries of Asia and Latin America, beneficiaries since 1976 of annual aid programmes.

The information within each of these groups is given by recipient country (in alphabetical order).

Note

As the information provided is subject to modification in line with the development aims and priorities of the recipient country, or with the conditions laid down by the authorities empowered to take financial decisions, the EEC is in no way bound by this summary, which is for information only.

Information given

The following details will usually be given for each development scheme:

— the title of the project;

— the administrative body responsible for it;

— the estimated sum involved (prior to financing decision) or the amount actually provided (post financing decision);

— a brief description of projects envisaged (construction work, supplies of equipment, technical assistance, etc.);

— any methods of implementation (international invitations to tender, for example);

— the stage the project has reached (identification, appraisal, submission for financing, financing decision, ready for implementation).

Main abbreviations

Resp. Auth.: Responsible Authority
Int. tender: International invitation to tender
Acc. tender: Invitation to tender (accelerated procedure)
Restr. tender: Restricted invitation to tender
TA: Technical assistance
EDF: European Development Fund
mECU: Million European currency units

Correspondance about this operational summary can be sent directly to:

Mr. Franco Cupini
Directorate General for Development
Commission of the European Communities
(ARCH.25/1-1)
200, Rue de la Loi
B-1049 Brussels

who will pass on requests for information to the services in charge of projects.

Sectoral Index

AGRICULTURE	
Irrigation and soil development, infrastructures, improvement	Burundi, Cameroon, Cape Verde, Dominica, Ethiopia, Ghana, Equatorial Guinea, Guyana, Kenya, Malawi, Mauritius, Mauritania, Niger, Rwanda, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Suriname, Swaziland, Chad, Upper Volta, Zambia, Zimbabwe, Egypt, Bangladesh, Burma, Indonesia, Sri Lanka, Nepal, The Philippines, DominicanRepublic, Haïti, Nicaragua, Honduras, Bolivia, Costa Rica, India, Interim Mekong Committee, Peru, Yemen
Coffee, tea, tobacco, cereals, earth-nut, ground-nut, maize, sugar, coton, palm-tree, coco-tree, rice, gum-tree, potatoes, citrus fruit, hevea	Burundi, Comoros, Chad, Ethiopia, Ghana, Guinea, Ivory Coast, Jamaica, Liberia, Madagasca, Mauritania, P.N.G., Solomon Islands, Senegal, Somalia, Surinam, Zaire, CILSS, Bangladesh, Burma, Thailand
Seed and crop protection, environment	Bahamas, Benin, Kenya, Mali, Mauritius, Niger Basin Authority, CILSS, Egypt, Mozambique, Bangladesh, Bhutan
Agro-industry	Burundi, Liberia, Solomon Islands, Sao Tome, Togo, Morocco, Thailand, Yemen (Arab Rep.)
Forestry	Gabon, Guinea Bissau, Fiji, Nigeria, New Caledonia, Niger Basin Authority
STOCK FARMING-FISHING-PISCICULTURE	
Improvement	Benin, Botswana, Burundi, Cameroon, Ethiopia, Ghana, Malawi, P.N.G., St. Lucia, St. Vincent, Sierra Leone, Togo, Upper Volta, Vanuatu, CARICOM, Tunisia, Angola, Mozambique
Veterinary actions	Jamaica, Kenya, Lesotho, Zambia, New Caledonia, Southern Africa, Kenya-Gambia-Senegal, Eastern Africa, ICIPE
Processing industry	Bahamas, Tonga, French Polynesia, Indonesia, India
RURAL HYDRAULICS	
Wells, bores, pumps, pipes, small dams	Botswana, Cape Verde, Guinea, Guinea Bissau, Guyana, Mali, Senegal, Sierra Leone, Swaziland, Zimbabwe, Togo, Nepal, Burma
TOWN WATER SUPPLY AND SEWERAGE	
Water supply, pipes, drinking water	Cape Verde, Comoros, Djibouti, Guyana, Mauritania, Niger, Rwanda, Tanzania, Uganda, Zaire, Zambia, Zimbabwe, New Caledonia
Sewerage, waste water, collectors, pumping stations, treatment	Cape Verde, Guyana, Senegal
SOCIAL CONSTRUCTIONS	
Houses, schools, hospitals, buildings, laboratories	Benin, Burundi, Cape Verde, Centralafrican rep., Chad, Congo, Ethiopia, Gambia, Guinea, Guinea Bissau, Guyana, Grenada, Kenya, Malawi, Mali, Mauritius, Mauritania, Rwanda, Senegal, Seychelles, Sierra-Leone, Somalia, Sudan, Surinam, Swaziland, Tanzania, Uganda, Upper Volta, Zimbabwe, CEAO, CERFER, Maritime Transport Conference, OCAM, OAPI, Forum Fisheries Agency, Eastern Africa, SADCC, CARICOM, Egypt, Jordan, Malta, Morocco, Yemen
TRANSPORTS AND COMMUNICATIONS	
Roads, bridges, airports, railways, ports	Benin, Cameroon, Cape Verde, Comoros, Congo, Dominique, Gambia, Grenada, Guinea, Guyana, Lesotho, Liberia, Malawi, Mauritania, P.N.G., Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Tanzania, Tonga, Zaire, Anguilla, Neth. Antilles, Turks & Caicos, Guyana-Surinam, Niger-Nigeria, Senegal-Guinea, Swaziland-Lesotho, CARICOM, Tanzania-Uganda, Pakistan, Nicaragua-Honduras
TELECOMMUNICATIONS	
Radio, telephone, satellites, hertzian	Ethiopia-Sudan, UAPT
ENERGY	
Power stations, dams, electrification	Bururldi, Cape Verde, Ethiopia, Jamaica, Kenya, Niger, Rwanda, Somalia, Surinam, Uganda, Upper Volta, Zaire, Zambia, O.M.V.G., Turkey
NEW AND RENEWABLE ENERGY	
Solar, wind-wills, biomass, gas, geothermics	Guinea, Senegal, French Polynesia, Rwanda-Zaire, South-Pacific (SPEC), Pakistan
MINING	
Soil survey, research, geophysical survey,	Mauritania, Senegal, Congo-Gabon
Infrastructure, production, processing plants	Upper Volta
MAPPING	
Soil-Air	Benin, Congo-Gabon
INDUSTRY	
Plants, productions	Burundi, Malawi
TRADE, INDUSTRY, TOURISM, INVESTMENTS PROMOTION - MANAGEMENT - MARKETING - S.M.E. TRAINING	Barbados, Benin, Botswana, Jamaica, Kenya, Madagascar, Mauritius, P.N.G., Rwanda, Senegal, Solomon, Somalia, St. Lucia, St. Vincent and Grenadines, Sudan, Tanzania, Uganda, Neth. Antilles, S.A.D.C.C., CARICOM, Algeria, Lebanon, Indonesia, Thailand, ASEAN, Yemen, Andean Pact, Central American Isthmus, Non associated developing countries.

ACP STATES

★ Denotes new projects

BAHAMAS

Animal feeds pilot project. Resp. Auth.: Ministry of Agriculture. Estimated cost 0.412 mECU. Works, supplies and T.A. 3 Int. tenders launched in September 83. 5th EDF.

Fruit crop nursery. Resp. Auth.: Ministry of Agriculture. Estimated total cost 1.016 mECU. EDF 0.510 mECU local 0.506 mECU. Works, supplies and T.A. Date financial decision September '83. 5th EDF.

BARBADOS

Trade promotion programme. Resp. Auth.: Barbados Export Promotion Corporation. 0.175 mECU. T.A., Trade promotion, Training, Research. 5th EDF.

Tourism development. Resp. Auth.: Barbados Board of Tourism — Barbados Hotel Association. 0.192 mECU. Production of a multilingual Travel Trade Manual and supply of equipment. Supplies: int. tender in 83. Date financial decision July 83. 5th EDF.

BENIN

Djougou-Porga road. Resp. Auth.: Ministère des Travaux Publics. Intermittent road improvements over 180 km. Economic study: SEDES Consultant (F). Technical study: BELLER Consultant (D). 4th EDF.

Dassa-Parakou road. Resp. Auth.: Ministère des Travaux Publics. 0.7 mECU. Reinstatement and asphalting of the road (210 km). Economic study: Technosynesis (I) and Carrara (ACP). 4th EDF. Works 5th EDF.

Upgrading of health service infrastructure in Porto Novo Hospital. Resp. Auth.: Ministère de la Santé Publique. Estimated cost 10 mECU : renovation and construction of the hospital building and equipment. Project on appraisal. Works : Int. tender foreseen 2nd half 84. 4th and 5th EDF.

Parakou polytechnical complex. Resp. Auth.: Ministère de l'Enseignement Moyen, Général, Technique et Professionnel. Total estimated cost 6.9 mECU. Construction of 8 000 m^2 of pedagogical and administrative buildings and hostels. Supplies and equipment. Technical and architectural study: Arch. VINOU (Local). Project on appraisal. Date foreseen for financial decision 1st half 84. 4th EDF.

Cotonou maternity hospital. Resp. Auth.: Ministère de la Santé Publique. ±1 mECU. Works: Acc. tender. Equipements: int. tender in '83. T.A. : TECHNOSYNESIS (I). Date foreseen for financial decision: 2nd half '83. 4th EDF.

Continuation and extension of fishery development project. Resp. Auth.: Ministère des Fermes d'Etat, de l'Elevage et de la Pêche. 1.7 mECU. T.A.: C.T.F.T. (F). Project in execution. 5th EDF.

Livestock development in the Borgou region. Resp. Auth: Ministère des Fermes d'Etat, de l'Elevage et de la Pêche. 5.5 ECU. Numerical and stabilizing cattle improvement for meat production increase. Date foreseen for financial decision December 83. Project on appraisal. 5th EDF.

Geological mapping and mining research between 9th parallel and Ocean. Resp. Auth.: Ministère de l'Industrie et de l'Artisanat. 3.640 mECU. National mineral resources development. Drawing up a geological chart, surveys, supplies. Restr. tender on the way. 5th EDF.

National Parks development and environment protection. Resp. Auth.: Ministère du Développement Rural. Estimated cost 4 mECU. T.A. and equipment for roads and T.A. for scientific actions and Fauna and Flora protection. Project on appraisal. Date foreseen for financial decision November '83. 5th EDF.

Survey on domestic and national expenditure. Resp. Auth.: Ministère du Plan, de le statistique et de l'Analyse Economique. Estimated total cost 1.340 mECU. EDF 0.800 mECU, FAC 0.285 mECU, Local 0.240 mECU. T.A. to collect, treat and to use statistical date. Training and supply of equipment. Project on appraisal. Date foreseen for financial decision December '83. 5th EDF.

BOTSWANA

Trade promotion. Resp. Auth.: Ministry of Commerce and Industry — Trade Promotion Unit (TPU). 1.1 mECU. TA, marketing studies, training. 5th EDF.

Village water supplies. Resp. Auth.: Ministry for Mineral Resources and Water Affairs. Planning Study: short-list already drawn up. Project on appraisal. 5th EDF.

Sheep and Goat development. Phase II. Resp. Auth.: Ministry of Agriculture. Animal Production Division and Animal Production Research Unit (APRU). Estimated total cost 2 mECU. EDF 1.6 mECU, Local 0.400 mECU. Works, supply of materials and equipment and T.A. Project on appraisal. Date foreseen for financial decision November '83. 5th EDF.

BURUNDI

Consolidation of tea production. Resp. Auth.: Ministère du Plan. 8.9 mECU. To increase productivity and to improve quality production of tea projects previously financed. TA: A.H.T. (D). Crop inputs and vehicles : int. tender launched in September 83. Project in execution. 4th EDF.

Institut Universitaire de Sciences de l'Education (IUSE). Resp. Auth.: Ministère de l'Education Nationale — 0.7 mECU. Construction and equipment of educational buildings (general teaching classes, laboratories, workshops). Architectural and technical studies: TETRA Consultants (Lux). Evaluation study: DURIAU (B). Project on appraisal. 4th EDF.

Rural development of East Mpanda. Resp. Auth.: Ministère de l'Agriculture. Development of 5 950 ha of land — irrigation, construction of a road network, socio-economic infrastructure, for a population of 5 320 families (of which 3 835 are to be installed). Duration 7 years. Estimate 50 mECU. Cofinanced project. Foreseen funding: IFAD — Local — AFDF — OPEC — PAM. Project in execution. Discussion on EDF participation. 5th EDF.

High altitude foodcrop production. Resp. Auth.: Ministère de l'Agriculture. First phase (4 years), estimate 8.3 mECU. Cofinanced project. Production of selected seeds, their distribution and commercialization of surplus products, fertilizer and planthealth products, training. Foreseen funding: Local 0.4 mECU — USAID 4.1 mECU — EDF 3.8 mECU. Int. tender 2nd half '83. T.A.: SOMEBU-AGRER (ACP-B). Project in execution. 5th EDF.

Livestock development project. Resp. Auth.: Ministère de l'Agriculture. Estimated Cost: ±1 mECU. Supply of equipment and T.A. Study : SEDES Consultant (F). Project on appraisal. 4th EDF.

Remera tea factory. Resp. Auth.: Ministère du Plan. Tea factory building for 600-700 tons/year. Project stage: identification. 5th EDF.

Rwegura-Kayanza-Ngozi region electricity supply. Resp. Auth.: REGIDESO. 2.150 mECU. Construction of medium voltage electric lines. Int. tender launched June 83 conditional upon provisional finance. Supervision of works : short-list already drawn up. Date financial decision September 83. 4th EDF.

Bujumbura naval ship yard. Resp. Auth.: Ministère des Transports. Study on hand by I.P.G. (D). 4th EDF.

Faculty of agronomy. Technical and architectural study. BRUSA-PASQUE (I). Project on appraisal. 5th EDF.

CAMEROON

Rural development in Logone and Chari departments. Resp. Auth.: Ministère de l'Agriculture. (SEMRY). Continuation and extension current operation, study on hand: Hydroplan (D) - 5th EDF.

Irrigated rice-growing in the Logone and Chari region. (Provisional programme 82/83). Resp. Auth.: Ministère de l'Agriculture (SEMRV). T.A. and studies. EDF part 1.080 mECU, Stabex allotment. Local 1.285 mECU. Project in execution. 5th EDF.

Eseka-Maloumé-Railway. Resp. Auth.: Office du chemin de Fer Transcamerounais (OCFT). EDF part 12.2 mECU for earth works. Int. tender after prequalification already launched and closed in September, conditional upon provisional finance. Date foreseen for financial decision October '83. 5th EDF.

★ **Fishery development in the Lagdo basin.** Resp. Auth.: Mission d'Etude de la Vallée Supérieure de la Benoue. Estimated total cost 2.422 mECU. EDF 1.469 mECU, FAC, local and NGO 0.953 mECU. Fisheries research, monitoring and T.A. Date foreseen for financial decision December 83 or 1st quarter 84. 5th EDF.

CAPE VERDE

Sal international airport improvement. Resp. Auth.: Ministère des Transports et Communications. Technical study financed by Italy. Partial financing envisaged. Project stage: identification. 5th EDF.

Underground water research in the Praia region. Resp. Auth: Secretariat du

Plan. Estimated cost ±1 mECU. Study: Administration. Date foreseen for financial decision, 1st quarter '84. 5th EDF.

Praia water supply and sewerage. Resp. Auth.: Secretariat au Plan. Estimated cost ±7.5 mECU. Prequalification before restr. tender launched in August and October 83. Date foreseen for financial decision, 1st quarter '84, cofinanced with Kuwait Fund. 5th EDF.

Civil works for laboratory construction. Resp. Auth.: Secretariat au Plan. Estimated cost 0.066 mECU. Construction of a laboratory for soil and rock mecanics in St. Jorge. Date foreseen for financial decision 1st quarter '84. 4th EDF.

Soil protection and conservation. Estimated cost 1.018 mECU. Project on appraisal. Date foreseen for financial decision 1st quarter 84. 5th EDF.

Praia electrification. Resp. Auth.: Secretariat au Plan. Estimated cost 0.900 mECU. Project on appraisal. Date foreseen for financial decision, 1st half 84. 5th EDF.

CENTRAL AFRICAN REPUBLIC

Renovation and equipment of Lycée Technique de Bangui. Resp. Auth.: Ministère de l'Education. 0.800 mECU. Supply of equipment and renovation works. Studies: O.R.T. (UK). Date foreseen for financial decision: 4th quarter '83. 5th EDF.

Rural development in the cotton area. Resp. Auth.: Ministère de l'Agriculture (SOCADA). Cofinanced project with I.D.A. and France. EDF 7 mECU. T.A.: shortlist not yet drawn up. Date financial decision: September '83. 5th EDF.

★ **Paediatric complex in Bangui and Provinces.** Resp. Auth.: Ministère de la Santé. Estimated cost 2.420 mECU. Buildings and supply of equipment. Works: acc. tender. Supplies: int. tender. Date foreseen for financial decision 1st half 84. 5th EDF.

CHAD

Rural interventions in the Sudan area. Study on the way by A.D.C. (UK). Project on appraisal. Int. tender for agricultural inputs, conditional upon provisional finance, launched in July '83. 5th EDF.

Health programme. Resp. Auth.: Ministère de la Santé. Estimated total cost 6.561 mECU. EDF 5.515 mECU — Médecins sans Frontières 0.557 mECU — Avions sans Frontières 0.180 mECU — Local 0.309 mECU. Works, supply of medicinals and medical equipment and T.A. Supplies: int. tender launched May 83. Projet in execution. 5th EDF.

Cotton productivity (84-85 Campaign). Resp. Auth.: Office National de Dév. Rural (ONDR). 3.8 mECU. Purchase of fertilizers insecticides, and equipment. Int. tender conditional upon provisional finance launched in July '83. Date foreseen for financial decision October '83. 5th EDF.

COMOROS

Economical and technical study to assess harbour infrastructure in Grande Comore and in Mohéli. Resp. Auth.: Ministère des Travaux Publics. NEI-D.H.V. (NL). Project on appraisal. 5th EDF.

Maize development project. Resp. Auth.: Ministère de l'Agriculture. Estimated Cost 1.9 mECU. Works, supplies and T.A. Project on appraisal. 5th EDF.

Mutsamudu water supply. Resp. Auth.: Ministère du Plan. 2.3 ECU. Works and supplies for drinking water supply to the town. Works and supplies: Int. tender conditional upon provisional finance launched in October 83. Project on appraisal. 5th EDF.

CONGO

Indo-Bihoua-Loudima Road. Resp. Auth: Ministère des Travaux Publics. 28.5 mECU. Reconstruction of the section Indo-Bihoua (20 km) and construction of a new road Bihoua-Loudima (57 km). Works: contract on awarding. Supervision of works: short-list already drawn up. Projet in execution. 4th and 5th EDF.

Sanitary and social actions. Resp. Auth.: Ministère de la Santé Publique. Study and construction of the Ouesso hospital and construction of the Ecole de formation paramédicale et médico-sociale J.J. Loukabou (Brazzaville). Appraisal of the project after sanitary programming and technical studies. Project stage: identification. 5th EDF.

DJIBOUTI

Djibouti water supply. Resp. Auth.: Ministère du Plan. 0.918 mECU. Improvement of production (EDF part). Pump station rehabilitation and reinstatement of the installations' management. (CCCE part). Works and supplies. Project in execution. 5th EDF.

DOMINICA

Reinstatement of Pont Casse-Castle Bruce Road — Resp. Auth.: Public Works Department. 2.2 mECU. Works by direct labour. Project on appraisal. Date foreseen for financial decision December '83. 5th EDF.

Crop diversification project. Resp. Auth.: Ministry of Agriculture. Estimated cost 0.547 m ECU. Continuation of essential oils programme. Works, supplies and T.A. Project on appraisal. Date foreseen for financial decision 1st quarter 84. 5th EDF.

EQUATORIAL GUINEA

Rural interventions. Project stage: identification. 5th EDF.

ETHIOPIA

Health project. Resp. Auth.: Ministry of Health. 15.400 mECU. Construction and equipping of two rural hospitals and a school for laboratory technicians in Addis Ababa. Works: on the way. Equipment: int. tender in 83-84. Projet in execution. 4th EDF.

Fishery Development. Resp. Auth.: Fisheries Development and Marketing Corporation. 2.078 mECU. EDF 1.513 mECU, Local 0.565 mECU. Supply of equipments, facilities and T.A. Supplies: int. tender in '83. T.A.: GOPA (D). Project in execution. 4th EDF.

Electrical tariffication study. Resp. Auth.: E.EL.P.A. Short-list already drawn up. Project on appraisal. 5th EDF.

Coffee improvement (phase 2). Resp. Auth.: Ministry of Coffee and Tea Development. 27.2 mECU. Works, supplies. T.A.: Short-list already drawn-up. Int. tender for fertilizer, insecticides in '83. Int. tender for equipment launched in February 83. 5th EDF.

Strengthening the rural engineering department of the Allemaya Agricultural College. Resp. Auth.: University of Addis Abbaba. 0.212 mECU. Stabex '81. Supply of laboratory equipment by int. tender. Date financial decision October 83. 5th EDF.

Amibara Irrigation Project. Supplementary financing. 2.9 mECU. Purchase of materials, rural equipment, tractors, vehicles by int. tender launched in October '83. Date foreseen for financial decision December 83. 5th EDF.

FIJI

★ **Forestry Logging Training School.** Resp. Auth.: Ministry of Forest. 0.500 mECU. Constructions and supply of equipment. Works by direct labour. Supplies: int. tender. Date foreseen for financial decision January 84. 5th EDF.

GABON

Reafforestation (improvement of the reafforestation brigade's activity). Resp. Auth.: Ministère de l'Agriculture. EDF part for renewing and completing equipment. Project stage: identification. Study: C.T.F.T. (F). 5th EDF.

GAMBIA

Brikama College, phase II. Resp. Auth.: Ministry of Works and Communications. 1.925 mECU. Construction and equipment of academic and residential buildings. Works by mutual agreement. Equipment for phase II: int. tender, 2nd half 1983. 4th EDF.

Rural vocational training, phase 2. Resp. Auth.: Rural Vocational Training Board and Directorate of Vocational Training in the President's Office. 0.500 mECU. Supply of pedagogical equipment, by Acc. tender. Project in execution. 5th EDF.

Feeder road construction. Resp. Auth.: Ministry of works and communications. 0.681 mECU. Stabex '81. Construction of 31 km of roads by direct labour. Date foreseen for financial decision October '83. 5th EDF.

GHANA

Central and Accra Regions Rural Integrated Programme (CARRIP). Resp. Auth.: Ministry of Finance and Economic Planning. Prefeasibility study for potential projects within the two regions, with the aim of improving the food situation in Accra and other coastal towns. Halcrow-U.L.G. (UK). Study: rehabilitation irrigation project: HEDESELSKABET (DK). 5th EDF.

Aveyme livestock development. Resp. Auth.: Ministry of Agriculture. 3.2 mECU. Works, supply of vehicles and equipment, T.A.: short-list already drawn up. 5th EDF.

Pretsea Oil Palm Plantation. Resp. Auth.: National Oil Palm Ltd. Supplementary financing. 0.915 mECU. Supplies, works and T.A. Project on appraisal. Date foreseen for financial decision October '83. 5th EDF.

GRENADA

Eastern main road rehabilitation. Phase 2. Repairing and strengthening of a section of the circular road. Estimated cost 1.350 mECU. Project on appraisal. 5th EDF.

Hillsborough jetty. Resp. Auth.: Ministry of Public Works. 0.357 mECU. Construction of a jetty for goods and passenger handling. 5th EDF.

National library. Resp. Auth.: Ministry of Education. 0.290 mECU. Repairing and extension. Date financial decision: September '83. 5th EDF.

Mirabeau Agricultural Training School. Resp. Auth.: Ministry of Construction and Public Utilities. 0.230 mECU. Works by direct labour. Date foreseen for financial decision October '83. 5th EDF.

GUINEA

Land development in Kankan and Labé regions. Phase II. Resp. Auth.: Ministère de l'Agriculture et des F.A.P.A. Valuation: Mac Donald and Partners (UK). Project on appraisal. 5th EDF.

New energy research and test. Resp. Auth.: Ministère de l'Energie et du Konkourè. Study on hand. 5th EDF.

Cotton development. Resp. Auth.: Ministère de l'Agriculture, des Eaux, Forêts et FAPA. Rural infrastructure, supply of rural inputs, equipment, vehicles and T.A. Project on appraisal, 5th EDF.

Town planning and construction of council houses. Resp. Auth.: Ministère de l'Urbanisme et de l'Habitat. Estimated cost 9 mECU. Buildings, supply of equipment and T.A. Project on appraisal. 5th EDF.

GUINEA BISSAU

Rio Campossa Bridge. Resp. Auth.: Commissariat d'Etat aux Travaux Publics. Estimated cost 2 mECU. Bafata-Bambadinca Road. Works, supply may be, T.A. Study STINCEM (I). Project on appraisal. Int. tender (conditional) launched in June '83. 5th EDF.

Health infrastructures. Resp. Auth.: Commissariat d'Etat au Travaux Publics. Estimated cost 1.9 mECU. Construction and equipment of 2 district hospitals, 4 health centres and staff-housing. Supply of equipment: int. tender on 2nd half 83. T.A.: Ass. Engineers (I). 5th EDF.

North-East forestry development. Resp. Auth.: Commissariat général au développement rural. Study on the way by Atlanta (D). 5th EDF.

Rural hydraulics. Resp. Auth.: Ministère des ressources naturelles. Estimated cost 1.4 mECU. Construction of big diameter wells (1.5 m) about 120 wells in the GABU region. Project on appraisal. Date foreseen for financial decision 4th quarter 83. 5th EDF.

GUYANA

East Bank Berbice rural development programme. Resp. Auth.: Ministry of Agriculture. Works: feeder roads, infrastructure. Supply of fertilizers and equipments. T.A. Project stage: identification. 5th EDF.

East Bank Berbice — Culverts for Secondary drains. Resp. Auth.: Ministry of Works. 0.900 mECU. Construction of culverts, by int. tender. Date foreseen for financial decision October '83. 5th EDF.

Faculty of agriculture. Estimated cost 1.100 mECU. Construction, supply of equipment and supervision of works. Technical study and tender dossier: Rodriguez (ACP). Project on appraisal. 5th EDF.

Rehabilitation of sewerage and water supply systems of Georgetown. 1.6 mECU. Laying sanitation pipes, construction of water supply wells. Supplies and T.A. Supply: int. tender launched May '83. 5th EDF.

Georgetown water supply improvement. Drinking water production. Works and equipment. 0.400 mECU. Date financial decision July 83. 5th EDF.

Fishing port and fish-market in Georgetown. Building of a new port and fish market in Georgetown. 2.700 mECU. Date foreseen for financial decision November '83. 5th EDF.

IVORY COAST

Oil-palm tree plantation extension programme. Resp. Auth.: Ministère de l'Agriculture and "Palmindustrie". Estimated total cost 18.2 mECU. EDF 10.306 mECU. Local 7.85 mECU: 12,517 h of palmtree plantations. Project on appraisal. Date foreseen for financial decision December '83. 5th EDF.

JAMAICA

Assistance to veterinary services. Resp. Auth.: Ministry of Agriculture. 1.1 mECU. Works: construction of office by direct labour, supply of equipments, vehicles, medical products, 3 int. tenders launched in September 83. T.A.: training by direct agreement. Project in execution. 5th EDF.

Board of Revenue — revenue information system. Resp. Auth.: Govt of Jamaica. 3.26 mECU. Reorganisation of the administration and preparation of the Revenue Information System. Supplies and T.A. Int. tender for supplies foreseen in 4th quarter '83. Supervision of project: X-TRA Consult. (B). Project in execution. 5th EDF.

Rural electrification programme. Erection of 160 miles electric lines. Estimated cost 4.596 mECU. EDF part 2.6 mECU. Project on appraisal. Int. tender (conditional) launched in July '83. Date foreseen for financial decision December 83. 5th EDF.

Citrus fruit production improvement. Resp. Auth.: Ministère de l'Agriculture. Estimated cost 3.5 mECU. Equipment, training and T.A. Credit line. Feasibility study by T.P.I. (UK). Project on appraisal. Date foreseen for financial decision end 83 or 1st quarter 84. 5th EDF.

KENYA

Machakos integrated development programme. Provisional Phase. Resp. Auth.: Ministry of Economic Planning and Development. Valuation study. Overseas Dev. Int. (UK). Supplies: int. tender launched in August '83 for insecticides. 5th EDF.

Kenya trade promotion. Resp. Auth.: Kenya External Trade Authority. 1 mECU. T.A. for sales and marketing missions, provision of equipment and materials for the Training Division. Project in execution. 5th EDF.

Eldoret Polytechnic. Estimated cost. 6 mECU. Construction, supply of equipment (pedagogical) and T.A. Preliminary Plan Study: Hughes & Polkinghorne (ACP). Project stage: identification. 5th EDF.

Veterinary investigation laboratory Mariakani. Adm. Resp.: Ministry of Livestock Department. Veterinary Department. 3.4 mECU. Construction of a veterinary investigation laboratory. Supply of materials and equipments. T.A. Materials and equipment: int. tender 2nd half '83. T.A.: direct agreement. 5th FED.

Turkwell hydro-electric project. Resp. Auth.: Ministry of Energy. Feasibility study and final study design tendering to be done. Short-list not yet drawn up. 5th EDF.

Assistance to the National Cereals and Produce Board for crop procurement. Resp. Auth.: Gov. of Kenya and NCPB. 4.6 mECU. Stabex allotment. Starting capital for the establishment of a crop procurement fund as an independent source of finance. Project in execution. 5th EDF.

LESOTHO

Maseru airport. Resp. Auth.: Ministry of Transport and Communication. Estimation 50 mECU. Provision of a modern international airport 15 km south of Maseru. Foreseen funding: Lesotho - Saudi Fund - Kuweit Fund - ABEDA 4.4 mECU - OPEC - Abu Dhabi - ADB. EDF and Finland. - Project on appraisal. 4th and 5th EDF.

Mohale's Hoek - Quthing road. Mohale's Hoek-Mekaling part. Resp. Auth.: Central Planning and Dev. Office. Reinstatement of a road. 25 km. Estimated cost ± 14 mECU. Project on appraisal. 5th EDF.

★ **Mohair Improvement Programme.** Resp. Auth.: Ministry of Agriculture. Livestock Division. 0.077 mECU. Stabex 82. Creation of a revolving fund for the purchase of better breeding material and veterinary drugs. Date foreseen for financial decision December 83. 5th EDF.

LIBERIA

Coffee and cocoa development project at Zwedru and Plahn. Resp. Auth.: Ministry of Agriculture 5.7 mECU, EDF 2.9 mECU, Local 2.8 mECU. To develop 980 hectares of robusta coffee and 1 320 hectares of cocoa in Grand Gedel and Sinoe countries. Works by acc. tender. — Supplies by int. tender in '83. Project in execution. 4th EDF.

Buto oil palm. Phase II. Resp. Auth.: Ministry of Agriculture. Continuation of the existing project in connection with the construction of an oil mill. T.A. and supply of equipment. Project on appraisal. 5th EDF.

Port Development Study South East — Phase II and III. Resp. Auth.: National Port Authority. Continuation of feasibility study. Project on appraisal. 4th EDF.

MADAGASCAR

Supply of pharmaceutical and medical products. Resp. Auth.: Gouvernement de Madagascar. Int. tender launched in September 83. 5th EDF.

Rehabilitation of the société-Malgache du palmier à huile (SOMAPALM). Resp. Auth.: Ministère pour la production agricole et la réforme agraire and Somapalm. 0.753 mECU. Stabex '81. Works supplies and T.A. Works by direct labour. Supplies by direct agreement. T.A.: I.R.H.O. (F). Date financial decision September '83. 5th EDF.

MALAWI

Blantyre-Mwanza road. (Lirangwe-

Mwanza-Mozambique Border Road.) Resp. Auth.: Ministry of Works. Reinstatement and asphalting of the road (±95 km). Estimated cost 33 mECU. Int. tender launched in July '83. Site supervision: restr. tender on the way. 4th and 5th EDF.

Dairy cattle development. Resp. Auth.: Ministry of Agriculture. Cross local bovine breed with european dairy breeds. Project on appraisal. 5th EDF.

Improvement of district hospitals and health centres. Resp. Auth.: Ministry of Works. 3.8 mECU. Building of small district hospitals and health centres. Works, supplies and T.A. Int. tender for Karonga launched in July '83. 5th EDF.

Salima Lakeshore Agricultural Development Division (SLADD) Phase IV. Resp. Auth.: Ministry of Agriculture. Estimated cost: 19.3 mECU. EDF 10.2 mECU. Local 9.1 mECU. Works, Supplies and T.A. Project on appraisal. Date foreseen for financial decision 1st half '84. 5th EDF.

Central and northern region fish farming development, training and research. Resp. Auth.: Ministry of Agriculture. Estimated cost: 3 mECU. Works, supplies, T.A. Project on appraisal. 5th EDF.

Strategic fuel reserve. Resp. Auth.: Economic Planning Division. OPC. 4.2 mECU. Construction of tanks farm for gasoil, petrol, ethanol. Associated infrastructure and equipment. T.A. Project on appraisal. 5th EDF.

Construction and rehabilitation of milk collection centres. Resp. Auth.: Ministry of Agriculture and Malawi Milk Marketing. 0.143 mECU. Stabex '81. Cofinanced project with Canada. Works and equipment by direct labour and direct agreement. Date foreseen for financial decision October '83. 5th EDF.

MALI

Strengthening of sanitary infrastructure in the Nioro region. Resp. Auth.: Ministère de la Santé et des Affaires Sociales et Ministère des Transports et T.P. 2.570 mECU. Buildings, equipments, training. Architecturals and technicals studies: GOUSIER (F). 4th EDF.

Rural hydraulics. Resp. Auth.: Direction Nationale Opération Puits (DNOP) and Direction de l'Hydraulique, et de l'energie (DNHE). Estimated cost: 4.3 mECU. Waterpoints. Date financial decision October 83. Supply: int. tender launched in September 83. 5th EDF.

Store-sheds construction for cereals. Resp. Auth.: Office des Produits agricoles du Mali (OPAM). 2 sheds 500 T capacity each. Stabex allotment 0.142 mECU. Works: restr. tender. T.A.: by German aid. Date financial decision, June 83. 5th EDF.

MAURITANIA

Extension of Kaëdi regional hospital. Resp. Auth.: Ministère de l'Equipement. 1.925 mECU. Construction, equipment and TA for Kaëdi hospital (100 beds). Works: on the way. Medical-technical equipment int. tender, 2nd half '83. Project in execution. 4th EDF.

Regeneration of gum-tree plantations. Resp. Auth.: Ministère du Développement Rural. Estimated Cost: 1.5 mECU. Feasibility study: Bureau COURTOY (B). Works. T.A. and supplies. T.A.: AGRER (B). Project on appraisal. 5th EDF.

Small dams construction in the Hodhs region. Resp. Auth.: Ministère du Développement rural. Estimated cost 3.5 mECU. Study on the way Binnie and Partners (UK). Project on appraisal. 5th EDF.

Regional capitals water supply. Resp. Auth.: Direction de l'Hydraulique. Estimated cost 2.5 mECU. Studies: deep water research and towns water supply. Short-list not yet drawn up. 5th EDF.

Nouakchott Wharf. Resp. Auth.: Ministère de l'Equipement et des Transports. Estimated cost 1.5 mECU. Maintaining, equipment and repairing. Project on appraisal. 5th EDF.

Orientated mining research in the Mauritanides. Resp. Auth.: O.M.R.G. (Office Mauritanien de Recherches Géologiques). EDF part 1,5 mECU. Concerning T.A., petrography and analysis. Restr. tender on the way. 5th EDF.

MAURITIUS

Mauritius housing project. Resp. Auth.: Mauritius Housing Corporation and the Ministry of Housing, Lands and Town and Country Planning. 3.2 mECU. Financing (for low income households) of approximately 1,250 housing units. Infrastructure work for urbanisation and service plots: int. tender, in '83. Consultancy service: — APFEL (D). 4th EDF.

Development of Ile Rodrigues. Resp. Auth.: Ministry of Agriculture. 3 mECU. Development centred on agricultural production. Economical and technical study, on the way: VINK (NL). T.A.: short-list already drawn up. 5th EDF.

Investments and trade promotion. Resp. Auth.: Ministry of Trade and Industry. (Investment Promotion Unit and Export Promotion Unit). 1.610 mECU. IMES (UK) - SOPROGI (F) RKW-TTC-Agroprogress (D). 5th EDF.

Phoenix-La Vigie road. Possible cofinancing with FAC (F) and local gov. EDF part ±5 mECU. Project on appraisal. 5th EDF.

NIGER

Rural development of Zinder Department. Resp. Auth.: Ministère de l'Agriculture. Estimated cost 7.6 mECU. Project on appraisal. 5th EDF.

Rural development of Badeguicheri Department. Resp. Auth.: Ministère de l'Agriculture. Estimated cost 3.4 mECU. Project on appraisal. 5th EDF.

Air Valley development. Resp. Auth.: Ministère de l'Agriculture. Estimated cost 2.8 mECU. Hydro-agricultural works. Project on appraisal. 5th EDF.

Rural hydraulics. Resp. Auth.: Ministère de l'Hydraulique. Estimated cost 5 MECU. 280 drills in the Zinder region. Int. tender (conditional) launched in August '83. Date financial decision October '83. 5th EDF.

Kollo water supply. Resp. Auth.: Ministère de l'Hydraulique. Estimated cost 1.8 mECU. Study: G.K.W. (D). Project on appraisal. Date foreseen for financial decision 1st quarter 84. Acc. tender condional upon provisional finance launched in October 83. 5th EDF.

Kandadji Dam. Resp. Auth.: Autorité du barrage de Kandadji. (ABK). Study Cofinanced with UNDP, FAC, EDF and Local. First part of the detailed technical studies. EDF and Local part: complementary exploring study: short-list already drawn up. 5th EDF.

NIGERIA

Kaduna afforestation project. Resp. Auth.: Federal Department of Forestry. Estimated Cost 10 mECU. Feasibility study: EUROCONSULT (NL). Project on appraisal. 5th EDF.

PAPUA NEW GUINEA

Foodstuffs production on the south coast. Resp. Auth.: Department of Primary Industry. E.D.F. part 3 mECU. Development of seasonal cultivation and marketing. Technical and economic studies. Definition of the project: Produce Studies Ltd. Consultant (UK). Project on appraisal. 4th EDF.

Momote airport. Resp. Auth.: Department of Transport and Civil Aviation. 1.000 mECU. Reconstruction and sealing of runway. Acc. tender for asphalting foreseen on June '83. 5th EDF.

Magi highway. Resp. Auth.: Department of Transport. 3.5 mECU. Upgrading and sealing of a road section. Works: int. tender foreseen 2nd half '83. 5th EDF.

Huris Grasslands cattle ranch and cocoa Project. Resp. Auth.: Department of Primary Industry. 1.460 mECU. Works, supplies, T.A. and training. Date financial decision July 83. 5th EDF.

RWANDA

Bugesera water supply. Resp. Auth.: Ministère du Plan. Construction of a drinking-water network in Bugesera. Project on appraisal. 5th EDF.

Development of Zaïre Nil Crest. Resp. Auth.: Ministère de l'Agriculture 13.8 mECU. Developpement of agricultural production and social-economic infrastructure. T.A.: INSTRUPA (D). Supply: int. tender in '83. Project in execution. 5th EDF.

Transmission-lines study in secondaries centres. Resp. Auth.: Ministère du Plan. Economicals and technicals studies to be done. Short-list already drawn up. 5th EDF.

Lines of credit for S.M.E. Resp. Auth.: Banque Rwandaise de Développement. 0.720 mECU. Development of the credit to the S.M.E. rurals with "Banque Populaire". Project on appraisal. Date foreseen for financial decision October 83. 5th EDF.

Strengthening of the "public enterprises". Resp. Auth.: Ministère du Plan. Estimated cost 2.595 mECU. Creation of a central accountancy agency, training and control data. Supply of equipment for auditing and office and vehicles. T.A.: Short list already drawn up. 5th EDF.

Development of Préfecture de Butare. Priority actions. Resp. Auth.: Ministères du Plan et de l'Agriculture. Total estimated cost 11.765 mECU. EDF 10.400 mECU. Local 1.365 mECU. Actions to improve rural products, S.M.E., handicrafts and administration. Works by direct labour or direct agreement. Supplies and equipment, int. tender or direct agreement. T.A.: Short-list already drawn up. Project in execution. 5th EDF.

ST LUCIA

Livestock development project. Phase 2. Resp. Auth.: Ministry of rural development. Estimated cost 0.860 mECU. Extension project zone. Works, supplies and T.A. Study: short-list already drawn up. Project on appraisal. 5th EDF.

★ **Tourism development project.** Resp. Auth.: Department of Tourism. 0.120 mECU. Preparation of promotion material and training. Project on appraisal. 5th EDF.

ST VINCENT AND GRENADINES

Livestock development project. Resp. Auth.: Ministry of Agriculture. 0.415 m ECU. Works, equipment and supply of vehicles. T.A. : shortlist not yet drawn up. Project in execution. 5th EDF.

★ **Tourism development project.** Resp. Auth.: Department of Tourism. 0.125 mECU. Upgrading Department of Tourism and preparation of promotion material. Project on appraisal. 5th EDF.

SAO TOME PRINCIPE

Equipment for cacao-tree plantations. 0.217 mECU. Stabex allotment. Supply of equipment, vehicles and spare parts. Int. tender launched in September 83. Project in execution. 5th EDF.

SENEGAL

New energy research and test in rural region. Resp. Auth.: Secretariat d'Etat à la Recherche Scientifique. 1.5 mECU. Creation of pilot unit for solar energy, biomass and wind energy. Studies T.A. and equipment. Studies: AGIP-AFOR (I). Equipments: int. tender in 83. Project on appraisal. 5th EDF.

Gum-tree plantation. Resp. Auth.: Ministère du Développement Rural. Estimated cost 2.5 mECU. Works, supplies and T.A. T.A.: Deutsche Forstinventur Service (D). Project in execution. 5th EDF.

Sewerage of the "Gueule Tapée" district. Resp. Auth.: Direction Générale des Travaux Publics. Estimated cost 6 mECU. Construction of canalization and pipes for rain waters. Improvement of the sewage network. Definition study and tender dossier: GEO PROGETTI (I). Project on appraisal. Date foreseen for financial decision 1st quarter 84. 5th EDF.

Trade Promotion programme. Resp. Auth.: Centre Sénégalais du Commerce Extérieur. 1.083 mECU. Actions for productions, marketing and T.A. Contract: direct agreement or restr. tender. 5th EDF.

Renovation of "St. Louis Hospital" and of the health centre of Tambacounda. Resp. Auth.: Ministère du Plan et de la Coopération. Estimated total cost 3.725 mECU. EDF 2.825 mECU. Luxembourg 0.900 mECU. Works: acc. tender launched 2nd half '82. Supplies: int. tender in '83. Project in execution. Supervision of works: Simon and Christiansen (Lux) and Socotec Senegal (ACP). 5th EDF.

Expenditures previously foreseen as participation of Govt. of Senegal for 3 projects financed on 4th and 5th EDF, charged on 5th EDF. 1.985 mECU. Complementary fouding for the project: "Livestock development" 0.700 mECU. Complementary funding for the project "Construction and equipment of ENIIE", 0.900 mECU. Complementary funding for the project "Handicraft promotion". 0.385 mECU. Project on appraisal. 5th EDF.

Noirot Bridge at Kaolack. Resp. Auth.: Direction Générale Travaux Publics. Estimated cost 2.4 mECU. Existing bridge replacement with a new. T.A.: to prepare technical dossier for an int. tender with competition. Int. tender foreseen 2nd half '83. T.A. : Bureau Obermeier (D). 5th EDF.

Experimental turf extraction in the Niayes region. Resp. Auth.: Ministère de Développement Industriel. 0.600 mECU. Works and T.A. Date financial decision April 83. 5th EDF.

Continuation of cereals-growing development in agricultural areas. Resp. Auth.: Ministère du Dév. Rural-Société des Terres Neuves. Estimated cost 2.2 mECU. Works (roads, drillings, wells) supply of fertilizers, building materials and T.A. Project on appraisal. Date foreseen for financial decision October '83. 5th EDF.

SEYCHELLES

Renovation of Victoria Hospital. Resp. Auth.: Ministry of Health. Estimated cost 11.5 mECU. EDF 2.4 mECU, ADB (African Dev. Bank) 4 mECU. Renovation and new constructions, supply of medical equipment. Works : int. tender launched in September 83. 5th EDF.

SIERRA LEONE

North-western integrated agricultural development project. Resp. Auth.: Ministry of Agriculture and Forestry. Four-year integrated programme to develop mangrove swamps, upland crops, coastal fishing, infrastructure. Estimated Cost: 6.03 mECU. EDF 4.9 mECU. Local 1.13 mECU. Works: acc. tender. Supplies: int. tender. T.A.: direct agreement. Project in execution. 4th and 5th EDF.

Koinadugu — Phase II. Resp. Auth.: Ministry of Agriculture and Forestry. Estimated total cost 8.370 mECU. EDF 7.5 mECU. Local 0,870 mECU. Buildings and housing, transport equipment, farminputs, operation, maintenance, staff salaries. Project in execution. 5th EDF.

Rural hydraulics. Resp. Auth.: Ministry of Agriculture and Forestry. Estimated cost 1.55 mECU. Construction of water points for villages with 2000 inhabitants. Study to prepare project and appraisal: IWACO (NL). Date foreseen for financial decision 1st quarter '84. 5th EDF.

Kambia Fishery Development. Resp. Auth.: Ministry of Agriculture and Forestry. 0.900 mECU. Construction of 2 buildings and a boatyard, supply of boats, motors, vehicles and T.A. T.A. : Short-list already drawn up. 5th EDF.

Economical study of the Sambamba-Kabala Road. Short-list already drawn up. Project stage : identification. 5th EDF.

Feeder roads construction Unit — Kambia District. Resp. Auth.: Ministry of Works. 0.248 mECU. Stabex '81. Purchase of road equipment (loader, tractor, trailer, pick-up) by int. tender. Date financial decision September '83. 5th EDF.

★ **Buildings for Njala University College (N.U.C.).** Resp. Auth.: Ministry of Education. 2.5 mECU. Construction of academic block and student hostel, supply of equipment and work supervision. Project on appraisal. Date foreseen for financial decision January 84. 5th EDF.

SOLOMON ISLANDS

Small rural infrastructure. Rural feeder roads, small wharves, storage shelds and rural water supplies. Works by direct labour or direct agreement. 0.500 mECU. Date financial decision: October '83. 5th EDF.

Credit line to Development Bank of Solomon Islands. Resp. Auth.: Ministry of Finance. Total estimated cost 7 mECU. Local 2 mECU, EDF 2 mECU, A.D.B. 3 mECU. Small loans for rural development projects. Project on appraisal. 5th EDF.

Coconut industry development project. Resp. Auth.: Ministry of Land and Natural Resources. Estimated cost 2 mECU. Project on appraisal. 5th EDF.

Navigational aids for provincial airfields. Resp. Auth.: Ministry of Transports and Communications. 0.470 mECU. Construction of buildings by direct labour. Supply and installation of navigational aid-systems by int. tender at the end of 83, Date financial decision September '83. 5th EDF.

SOMALIA

Saakow rural experimental centre. Resp. Auth.: Ministry of Agriculture. Creation of an irrigated area (60 ha) with all facilities and equipment. Aim: agronomical experiments. Estimated total cost: 5.026 mECU. EDF: 4.950 mECU. Local 0.076 mECU. Works: 4 kms of tracks, pump station (180 l/s) electric power station (120 KVA). Supply of: agricultural equipment, 3 tractors, vehicles, furnitures. T.A. : short list already drawn up. Land improvement works and estate infrastructure: contracts awarded. Supplies: int. tender 4th quarter '83. Project in execution. 4th EDF.

Bardheera Dam. Resp. Auth.: Bardheera Dam Authority (BDA). 600 mECU. (Estimated) Dam Project 500 mECU. Powerline to Mogadishu 100 mECU. Funding: EDF, Italy, Germany, France, Saudi Arabia, Abu-Dhabi, Koweit Funds, FADES, Isl. Dev. Bank. Local. Power and river regulation for agricultural development. Construction of a concrete gravity dam with hydro-power station, associated infrastructure and electrical transmission lines. The dam will provide water, flood protection and power for up to 233 000 ha of irrigated agriculture in the Juba Valley, and energy to Mogadishiu. Civil works: first int. tender during 1984. Transmission lines int. tender in 1984. Equipment: powerhouse main equipment and auxiliary equipment, int. tenders in 1985. Gates, valves, intake equipment, int tender in 1986. Study: 4th EDF. Works: 5th EDF.

Mogadishu Institute of Statistics. Resp. Auth.: Ministry of Public Works. Estimated cost: 0.800 mECU. Supply: int. tender in '83. Project on appraisal. 4th EDF.

Development of phenicículture (datepalm). Resp. Auth.: Ministry of Agriculture. Estimated cost 2 mECU. 1000 ha plantation in the North region. Supply of equipment, machines, inputs, rural monitoring. T.A. to define, may be French aid. Project on appraisal. 5th EDF.

Somalia Trade Promotion. Resp. Auth.: Ministry of National Planning. 0.670 mECU. Four independent components: development of supportive infrastructure and T.A. for frankinceuse, myrrh and gums. Identification of obstacles to livestock exports and study of livestock marketing. Participation in Trade Fairs. Training, short term consultancies. 5th EDF.

"Aula Magna" Mogadishu National University. Resp. Auth.: Ministry of Public Works. ±2.5 mECU. Project on appraisal. 4th EDF.

Mogadishu Slipway. Rep. Auth.: Ministry of Planning. Estimated cost 3 or 4 mECU. Feasibility study on the way by AVECO (NL). 4th EDF.

SUDAN

Jebel Marra rural development project. Resp. Auth.: Ministry of Agriculture, Food and Natural Resources. 15.043 mECU. EDF 11 mECU. Local 4.043 mECU. Agricultural extension and improvement or rural infrastructure (road improvement and maintenance, forestry programme, community development programme). Supplies: int. tender for fertilizers in 83. TA: Hunting Technical Services Ltd (UK). Project in execution. 4th EDF.

University of Juba, phase II. Resp. Auth.: Ministry of Education. 7 mECU. Additional facilities on the new campus for a capacity of about 400 students: 3 hostels, (1 100 m^2 each) dining hall and kitchen (360 m^2), 3 college buildings (1 850 m^2), 21 staff houses (each 170 m^2). Works including infrastructure for water, severage and electricity: int. tender launched September '82. Equipment: int. tender in 1983. 4th EDF.

Trade promotion Sudan. Resp. Auth.: Ministry of Co-operation, Commerce and Supply. 0.34 mECU. Studies, T.A. and participation in trade Fairs. Studies and contract: Short-list already drawn up. 4th EDF.

Port Sudan-Hayia railway. Resp. Auth.: Sudan Railway Corporation. Expertise: KAMPSA(DK). 4th EDF.

Magwe — Upper Talanga feeder road. Resp. Auth.: Ministry of Finance and Economic Planning. 1.170 mECU. Rehabilitation and regravelling of existing roads and construction of feeder roads. Preparation of the tender dossier: GITEC (D). Date financial decision September '83. 5th EDF.

SURINAME

Rice project at Coronie. Resp. Auth.: Ministerie van Landbouw, Veeteelt, Visserij en Bosbouw. Rice production developments. Study on the way. EUROCONSULT (NL). Project on appraisal. Date foreseen for financial decision November '83. 3rd and 5th EDF.

Improvement health services in the interior. Phase II. Resp. Auth.: Public Works Department. Construction of a health training centre. Works by direct labour. Supplies by direct agreement 0.410 mECU. Date financial decision July '83. 3rd EDF.

LTS — Geyersvlijt. Resp. Auth.: Public Works Department. Construction of school building. Lower level technical education. Estimated cost 2.2 mECU. Int tender foreseen 4th quarter 83. Date financial decision July '83. 3rd EDF.

Tapawatra micro-hydropower project. Project stage: identification. 3rd and 4th EDF.

SWAZILAND

Rural hydraulics. Resp. Auth.: Rural Water Supply Board. Estimated cost 2.456 m ECU. Study construction, works supervision. 12 villages. Supply of equipment and material. Study and works supervision: short-list already drawn up. 5th EDF.

Teacher training colleges; Ngwane, Pigg's Peak. Resp. Auth.: Ministry of Works. 7.4 mECU. Extension for Ngwane and new construction for Pigg's Peak. Supply of equipment and T.A. to prepare tender dossier and site supervision. For Ngwane acc. tender, for Pigg's Peak int. tender. Supplies: int. tender. T.A.: Cusdin, Burden and Howitt (ACP). 83. 5th EDF.

★ **Rural Development Areas Programme. Phase II.** Resp. Auth.: Ministry of Agriculture. Estimated Cost 3.3 mECU. EDF 3 mECU, local 0.300 mECU. Farming inputs, T.A. and training. Project on appraisal. Date foreseen for financial decision 1st quarter 84. 5th EDF.

TANZANIA

Lusahunga-Bukombe road. Resp. Auth.: Ministry of Works. 20 mECU EDF part. Bitumen road of 127 km. Works: Int. tender foreseen 2nd half '83. Supervision of work: GITEC (D). Seek for cofundings. Regional project. 4th EDF.

Technical teacher training college, Mtwara. Resp. Auth.: Ministry of Education. 1.4 mECU. Training facilities for technical teachers. Classrooms, laboratory and workshops, dormitories and sanitary block, administration. Total area 3,765 m^2. Equipment: int. tender with possibility of restr. tender or direct agreement depending on nature of supply. Supplies: restr. tender, all in '83. 4th EDF.

Mtwara water supply. Resp. Auth.: Ministry of Water, Energy and Minerals. 5 mECU. Works: drilling of new wells, and constructions. Supply of equipment and T.A. Drilling activities and power supply connections by direct labour. Other works: int. tender in '83. Supplies: int. tender in '83. Supervision of works: G.W.E. (D). 5th EDF.

Mwanza water supply. Resp. Auth.: Ministry of Water, Energy and Minerals. 11 mECU. Construction of a new water intake, installation of a new pumping equipment and treatment plant, laying of a new distribution pipelines. Works and supplies. Int. tender with prequalification launched in September 83. Contract for supervision of works: short-list already drawn up. 5th EDF.

Trade Promotion programme. Resp. Auth.: Tanzania Board of External Trade (BET). 0.288 mECU. T.A. for B.E.T. Date foreseen for financial decision. October '83, 5th EDF.

Tourism Promotion. Resp. Auth.: Tanzania Tourist Corporation (TTC). 0.288 mECU. T.A. for T.T.C. Date foreseen for financial decision October '83. 5th EDF.

TOGO

Rural hydraulics. Resp. Auth.: Direction de l'Hydraulique et de l'Energie (D.H.E.). 2.570 mECU. Construction of ±240 drills, supply of manual pumps and training. Date financial decision, September '83. Int. tender for 240 drills launched in February 83. 5th EDF.

Provisions improvement for Agou oil palm plant. Resp. Auth.: Ministère du Développement Rural. EDF 5 mECU. Project on appraisal. 5th EDF.

★ **Draught animal farming development.** Resp. Auth.: Ministère de Développement Rural. Estimated total cost 2.350 mECU. EDF 0.710 mECU. US aid 1.280 mECU. Local 0.360 mECU. Supply of equipment and T.A. Creation of a revolving fund. Project on appraisal. Date foreseen for financial decision 1st quarter 84. 5th EDF.

TONGA

Supply of a dredger. Resp. Auth.: Ministry of Works. Estimated cost 0.500 mECU. Technical study: EUROCONSULT (NL). Int. tender foreseen 2nd half '83. Project on appraisal. 5th EDF.

★ **Faua Fisheries Harbour.** Resp. Auth.: Ministry of Works. Estimated cost 3 mECU. Construction of a new fisheries harbour, repair yards, fish market and wholesale store with ice-making equipment. Int. tender for the supply of steel sheet piles foreseen in November 83 (conditional). Supply of cooling and ice equipment int. tender in 84 or 85. Works by direct labour. Project on appraisal. Date foreseen for financial decision 1st half 84. 5th EDF.

UGANDA

Primary health centres rehabilitation. Resp. Auth.: Ministry of Health and Ministry of Works. 1.1 mECU. To improve health care in rural areas. Works: acc. tender. Supply: int. tender in '83. Project on appraisal. 4th EDF.

Rural electrification project. Resp. Auth.: Ministry of Power and Communications. 5.9 mECU. Supply of 33 KV electrical distribution lines. Erection by direct labour. Int. tender conditional upon provisional finance launched in June '83. Project on appraisal. Date foreseen for financial decision December '83. 5th EDF.

T.A. to the Uganda Development Bank. Resp. Auth.: Uganda Dev. Bank. 2 experts. 1 year, renewable. Short-list already drawn up. Project on appraisal. 5th EDF.

Kampala city roads. Resp. Auth.: Kampala City Council. 10.6 mECU. To rehabilitate selected Kampala roads. Works and supervision. Int. tender conditional upon provisional finance launched on April 83. Date financial decision October '83. 5th EDF.

Kampala water supply rehabilitation. Phase II. Resp. Auth.: Ministry of Lands, Minerals and Water Resources. 5.27 mECU. Works, supplies and supervision. T.A. Date financial decision October '83. 5th EDF.

UPPER VOLTA

Mine of Poura rehabilitation. Resp. Auth: Ministère du Commerce, du Développement Industriel et des Mines. 4.14 mECU for assessment of the worker's town. Study on hand. Project in execution. 5th EDF.

Kompienga Dam. Resp. Auth.: Ministère des Travaux Publics des Transports et de

l'Urbanisme. Cofinanced project. Estimated cost ± 102 mECU. Earth-dam construction, access road non asphalted ± 18 kms, two groups of alternators 7800 KVA each, transmission power lines. Works: restr. tender after prequalification. Prequalification done. Int. tender launched December 82. Project on appraisal. Date foreseen for financial decision November '83. 5th EDF.

Development of the Douna plain. Resp. Auth.: Ministère du développement rural. Estimated cost 10 mECU. Irrigation and draining works, supply of equipments, inputs and T.A. Project on appraisal. Date foreseen for financial decision November '83. 5th EDF.

Young farmers' training. Resp. Auth.: Ministère du Développement Rural. 2.880 mECU. T.A., works and equipment. T.A.: C.E.R.E.D. (F). 5th EDF.

Small ruminants and poultry farming in the Yatenga region. Resp. Auth.: Ministère du développement Rural. 1.150 mECU. Constructions, supply of equipment, training and monitoring. Project in execution. 5th EDF.

★ **Strengthening of the health service in the North and Sahel Regions.** Resp. Auth.: Ministère de la Santé. Estimated cost 1.2 mECU. T.A., training, works and supply of equipment. Project on appraisal. Date foreseen for financial decision November 83. 5th EDF.

VANUATU

Village fisheries, Research and development. Resp. Auth.: Fisheries Department. 0.600 mECU. Promotion and improvement of artisanal fishing. Project on appraisal. Date foreseen for financial decision December '83. 5th EDF.

ZAIRE

Kinshasa water supply. Resp. Auth.: REGIDESO. Estimated total cost 18 mECU. EDF 7.5 mECU local 10.5 mECU. Study for tender dossier by Bonifica (I). Project on appraisal. Date foreseen for financial decision October '83. 5th EDF.

Akula-Gemena road. Resp. Auth.: Commissariat aux Travaux Publics. Upgrading and asphalting of the road (115 km). Economic study: Bureau SPE (Local). Technical study: LUXCONSULT (Lux). Project on appraisal. Int. tender foreseen on 4th quarter '83. 5th EDF.

Thé Butuhé. Resp. Auth.: Département de l'Agriculture (Commission Agricole du Kivu). Strengthening and prosecution existing projects. T.A. for management and trading. Date financial decision October '83. Fertilizers: int. tender (conditional) launched in August '83. 5th EDF.

Kalemie port rehabilitation. Resp. Auth.: Département des Transports et Communications. Estimated cost not available. Study on the way by CADIC (B). 4th EDF regional. Project on appraisal. 5th EDF.

Banana deep water port. Resp. Auth.: Departement des Transports et Communications. Feasibility study: SEMA-TRACTIONNEL-OTUI (F.B.F.). 4th EDF. Complementary technical study: for the port (F+I), electrical (B), water supply (D), water research (EDF). Project stage: identification. 5th EDF.

Cocoa plantation at Bulu. Resp. Auth.: CACAOZA-Departement de l'Agriculture. Strengthening and continuation existing operations. Date financial decision October '83. Fertilizers: int. tender (conditional) launched in August '83. 5th EDF.

Palm trees at Gosuma. Resp. Auth.: PALMEZA-Departement de l'Agriculture. Strengthening and continuation existing operations. Date financial decision October '83. Fertilizers: int. tender (conditional) launched in August '83. 5th EDF.

Butembo-Beni hydro-electrical development. Preliminary study done by Tractionnel (B) on local funds. Detailed economical and technical studies: short-list already drawn up. Project on appraisal. 5th EDF.

Rural roads in Sud-Ubangui. Resp. Auth.: Office des routes. Total cost 5.190 mECU. EDF 4.950 mECU, CDI (Centre de Développement Intégral de Bwamanda-NGO) 0.240 mECU. Works by CDI and villages. Supply of graders, trucks by int. tender, on 4th quarter '83. Date financial decision March 83. 5th EDF.

ZAMBIA

Rural water supply study — 5 Townships. Resp. Auth.: Ministry of Agriculture and Water Development. Engineering Design. Short-list already drawn up. 5th EDF.

Rural water supply study. 4 Townships. Resp. Auth.: Ministry of Agriculture and Water Development. Feasibility Study. Short-list already drawn up. 5th EDF.

Zambia marketing and trade promotion. Resp. Auth.: Ministry of Commerce and Industry. Zambian Export Promotion Council. 0.795 mECU. Product Development and Marketing. Marketing management. Trade Fairs — Tourism planning and promotion. Contracts by direct agreement. 5th EDF.

Animal vaccine unit production. Laboratory construction. Supply of equipment and T.A. Estimated cost 3.79 mECU. EDF 3 mECU, local 0.79 mECU. T.A.: short-list already drawn up. 5th EDF.

Mkushi electrification. Estimated cost 6.07 mECU. EDF 3.07 mECU. Cofinancing needed. Study on hand: MERTZ McLENNAN (UK). Project stage: identification. 5th EDF.

Mpongwe development project, phase 2. Resp. Auth.: Ministry of Agriculture and Water Development. (M.A.W.D.) 3.712 mECU. To complete and develop existing project. Works, supplies and T.A. Project on appraisal. 5th EDF.

ZIMBABWE

Rural clinics. Resp. Auth.: Ministry of Health. 4.5 mECU. Construction and equipment of 64 rural clinics and 128 staff houses. Works: direct labour. Equipments: int. tender. (Non associated dev. countries budget).

Development of accelerated resettlement schemes. Resp. Auth.: Ministry of Lands, resettlement and Rural development. 5.450 mECU. (EDF part). Infrastructures, agricultural activities, equipments and inputs. Int. tender for the supply of fencing material launched in October 83. Project on execution. Date financial decision May '83. 5th EDF.

Rural water supply study. Resp. Auth.: Ministry of Water Ressources and Development. Short-list already drawn up. 5th EDF.

Rural water supply — accelerated programme for drought relief in Victoria Province. Resp. Auth.: Ministry of Water Resources and Development. Total cost 3.9 mECU. EDF 2.5 mECU. EDF part: drilling and linings. Works: acc. tender or direct agreement. Date financial decision July 83. 5th EDF.

Veterinary Faculty of the University of Zimbabwe. Resp. Auth.: University of Zimbabwe. 12.5 mECU National project Zimbabwe plus Regional project with Botswana, Malawi and Swaziland. Construction and supply of equipment for the faculty. All by int. tender. Date foreseen for financial decision October 83. Works: int. tender (conditional) launched in August '83. Supplies: int. tender launched in September 83. 5th EDF.

Overseas Countries and Territories (OCT)

ANGUILLA

Road Bay jetty and port facilities. Resp. Auth.: Gov. of Anguilla and British Development Division (Barbados). Estimated cost 0.700 mECU. Expertise for technical and economical appreciation and to prepare designs and tender documents. Short-list already drawn up. Project stage: identification. 5th EDF.

NETHERLANDS ANTILLES

Port equipment for Saba. Resp. Auth.: Department voor ontwikkelingssamenwerking. Purchase of a crane. 0.450 mECU. Date financial decision September '83. 5th EDF.

Road improvement on Bonaire. Resp. Auth.: Departement voor Ontwikkelingssamenwerking. Estimated cost ± 1 m ECU. Project on appraisal. 5th EDF.

Meteo-building in St. Marteen. Resp. Auth.: Central and Island government. 0.550 mECU. Construction and equipment. All by direct agreement. Date financial decision September '83. 4th EDF.

Line of credit for the Neth. Antilles Development Bank. Resp. Auth.: Dev. Bank (OBNA). 0.750 mECU. Line of credit for the promotion of crop-farming, stock farming and fisheries. Date financial decision September '83. 4th EDF.

FRENCH POLYNESIA

Tahiti territorial abattoir. Resp. Auth.: Service de l'Economie Rurale, Papeete (Tahiti). Secrétariat d'Etat des Départements et Territoires d'Outre-Mer, Délégation de la Polynésie Française, Paris. Cofinancing with France. Project on appraisal. 4th EDF.

Gas-generators and electro-generators powerstations in the Touamotou Islands. Resp. Auth.: Assemblée Territoriale des Touamotou. 0.460 mECU. Supply of gas-generators fed with charcoal from coconut waste and coco-trees wood waste. Int. tender foreseen 2nd half 83. Date foreseen for financial decision 4th quarter 83. 4th EDF.

NEW CALEDONIA

Loyauté Islands water supply. Resp. Auth.: Direction Territoriale des Services Ruraux. 0.900 mECU. Constructions and drills and small water supply networks. Project in execution. 5th EDF.

Reafforestation programme. Resp. Auth.: Territoire de la Nouvelle Calédonie des Eaux et Forêts. Estimated total cost 4.7 mECU. EDF part ±3 mECU. Cofunding with France, CCCE (F) and Local. 3,000 ha plantation "Pin de Caraibes" with all necessary infrastructure and investments. Project on appraisal. 5th EDF.

Veterinary laboratory and zoosanitary investigation. Total estimated cost 1.5 mECU. EDF 0.350 mECU. Territoire and FIDES 1.150 mECU. Project in execution. 5th EDF.

TURKS AND CAICOS ISLANDS

Transport study, North and Middle Caicos. Resp. Auth.: Public Works Department. Wallace Evans and Partners (UK). 5th EDF.

Regional Projects

ETHIOPIA — SUDAN

Telecommunications project. Technical study done by U.I.T. Economical and commercial study to be done. Short-list not yet drawn up. 5th EDF.

O.C.A.M.

Building and equipment of Institut Africain et Mauricien de Statistiques et d'Economie Appliquée in Kigali. Resp. Auth.: I.A.M.S.E.A. Total estimated cost 4.8 mECU. EDF part ±3 mECU. Pedagogical, administratives and hostel buildings (4,000 m^2). Correspondent equipment supply. Date financial decision July 83. Works: int. tender in 83. Supplies by German aid. 5th EDF.

MEMBER COUNTRIES OF ORGANISATION AFRICAINE POUR LA PROPRIETE INTELLECTUELLE (O.A.P.I.)

Building and equipment of Centre Africain de Documentation et Information en matière de Brevets. Resp. Auth.: O.A.P.I. 1.207 mECU. Construction of 1,358 m^2 of buildings, and supply of equipment. Works: contracts in awarding. Supplies: int. tender 2nd half '83. Project in execution. 5th EDF.

CONGO-GABON

Haut-Ivindo iron mine. Resp. Auth.: Ministère des Mines et de l'Energie (Congo) — Ministère des Mines, et du pétrole (Gabon). EDF 7 mECU. Mapping, soil survey, borings. Study to be done. Int. tender (conditional) launched in July 83. Date financial decision September 83. 5th EDF.

MEMBER COUNTRIES OF CEAO

ESITEX Segou (Mali). Resp. Auth.: CEAO Secretariat. Management training for textile industry. Complex construction in Segou. Supply of equipment. Project stage: identification. 5th EDF.

Ecole des Mines et de la géologie, Niamey. Resp. Auth.: CEAO Secretariat. Creation of a school for 350 students coming from CEAO countries. Estimated total cost 28 mECU. EDF 7 mECU. Cofundings with FAC-BAD-D. Project on appraisal. Works: prequalification launched in October 83. 5th EDF.

WESTERN AND CENTRAL AFRICAN

WESTERN AND CENTRAL AFRICAN COUNTRIES MEMBERS OF CONFERENCE MINISTERIELLE SUR LE TRANSPORT MARITIME

★ **Académie régionale des Sciences et techniques de la mer in Abidjan.** Resp. Auth.: Ministère de la Marine Ivory Coast. Estimated total cost 32.3 mECU. EDF part for pedagogical equipment 2 mECU. Int. tender (conditional) foreseen end 83 or early 84. Works, T.A. and other equipments: BAD, Japan, Norway, UNDP, France and local. Date foreseen for financial decision December 83. 5th EDF.

GAMBIA — SENEGAL (O.M.V.G.)

Bridge barrage on the river Gambia. Resp. Auth.: Ministry of Works and Ministère des Travaux Publics. Estimated cost in 78: 60 mECU. Foreseen funding: F.R.G. 20 mECU. Canada 21.7 mECU, USA 11/22 mECU, Technical study: DHV-Rijkswaterstaat-Waterloopkundig Laboratorium Delft (NL). For Phase I - Phase II: Rhein-Ruhr (D).Project stage: identification. 5th EDF.

Agronomical study for the area concerned by the bridge barrage. Short-list already drawn up. 5th EDF.

NIGER — NIGERIA

★ **Zinder-Bakin Birji Road.** Resp. Auth.: Ministère des Travaux Publics, Niger. Estimated cost 10 mECU. Bitumen road for 43 km. Section of the Transsaharienne. Works: int. tender foreseen 2nd quarter 84. Work supervision: direct agreement. Date foreseen for financial decision 1st half 84. 5th EDF.

GUYANA — SURINAM

Guyana — ferry-link. Resp. Auth.: Ministry of Public Works and Ministerie van Openbare Werken. Link ferry on Corentine river. Study on the way by C.A. Liburd and Ass. + Sescon Group (ACP). Project on appraisal. 4th EDF.

BENIN — IVORY COAST — NIGER — TOGO — UPPER VOLTA

Regional training centre for road maintenance in Lomé-Togo. (CERFER). Resp. Auth.: Secretariat CERFER. Training. T.A. and scholarships. Estimated cost 0.900 mECU. Project stage identification. 3rd, 4th and 5th EDF.

RWANDA — ZAIRE

Methane gas from Lake Kivu. Resp. Auth.: CEPGL and Commission mixte de 2 pays. Feasibilty study foreseen with EDF, EIB fundings: for 2 stations with urea unit, compressed gas and methane. Pre-qualification launched in July 83. Project on appraisal. 5th EDF.

NIGER BASIN AUTHORITY

Protection and reafforestation in the "Haut Bassin Versant du fleuve Niger in Guinea". Works, supplies and T.A. Estimated total cost 1.5 mECU. Project stage: identification. 5th EDF.

MEMBER COUNTRIES OF CIADFOR

Extension of A.N.F.P.P. (Agence Nationale de formation et de Perfectionnement Professionnels) in Libreville. Extension and modernization and new complex building in Oloumi. Project stage: identification. 5th EDF.

SENEGAL — GUINEA

Tambacounda-Labe road Resp. Auth.: Ministère des Travaux Publics. Upgrading and asphalting of the road (455 km). Economic study: SONED (SE). Technical study to be done. Short list not yet drawn up. Project on appraisal. 4th EDF.

FRENCH SPEAKING AFRICAN AND INDIAN OCEAN ACP COUNTRIES

Ecole de statistiques d'Abidjan. Resp. Auth.: Ministère du Plan et de l'Industrie. Total estimated cost 3.7 mECU. EDF 2 mECU. Ivory Coast 1.7 mECU. Construction and equipments. Architectural study: Bureaux DLM. Architects and Cabinet ARCAUD (ACP). Project on appraisal. Date foreseen for financial decision December 83. 4th EDF.

WESTERN SAMOA — FIJI — SOLOMON — KIRIBATI — TUVALU — PAPUA NEW GUINEA — TONGA

Renewable energy development project in the South Pacific. Resp. Auth.: SPEC (South Pacific Bureau for Economic Cooperation). 6.2 mECU. Creation of pilot units for ocean energy, gas, small stations 25 kW fed with wood waste. Photovoltaic generators 20 kW and wind-generators 15 kW. Prefaisibility study on the way: LAHMEYER and DORNIER (D). Works, supply and T.A. Supplies: int. tender 2nd half 1983. T.A.: 2nd half 83. Project on appraisal. 5th EDF.

TOGO — MALI — UPPER VOLTA — NIGER — CHAD

Agricultural products regional transit centre, in the Lome port. Resp. Auth.: Ministères du Plan. Estimated total 7 mECU with cofunding.Technical and economic feasibility study: Bureau SATEC (F). Project stage: identification. 4th and 5th EDF.

SOUTHERN AFRICA

Foot-and-mouth disease prevention. Resp. Auth: Development Committee. Study to be done: Feasibility. Short-list already drawn up. Project stage: identification. 4th EDF.

PACIFIC ACP COUNTRIES

Forum Fisheries Agency Headquarters. Resp. Auth.: South Pacific Bureau for Economic Cooperation (SPEC). 0.650 mECU. Creation of an international fisheries resources management agency. Works by acc. tender. Supply of equipment restr. tender. Supply of computer and data processing equipment, int. tender. Project in execution. 4th and 5th EDF.

SENEGAL — GAMBIA GUINEA BISSAU

Dakar — Banjul — Bissau Road. Resp. Auth.: Ministères Travaux Publics of the 3

countries. Asphalted road between Mandina Ba (Gambia) and Sao Vicente (Guinea Bissau). 129 km. Estimated cost 35 mECU. EDF 10 mECU. Technical study : Associated Eng. (I.). Works : int. tender launched in July 83 conditional upon provisional finance. Date financial decision September '83. 5th EDF.

MEMBER COUNTRIES OF CEAO AND CILSS

Construction of Centre Régional d'Energie Solaire (CRES) in Bamako, Mali. Estimated total cost 30 mECU. EDF part. 2.270 mECU. T.A. and equipment. Date financial decision October '83. 5th EDF.

MEMBER COUNTRIES OF CILLS

Provisional survey of natural renewable resources in the Sahel. Resp. Auth. : CILLS Secretariat. Estimated cost 6 mECU. EDF ± 1.5 mECU. Setting up of an observation unit to forecast crop production. Remote sensing by satellite, air survey and ground control. Project stage: identification. 5th EDF.

Project to improve the means of monitoring on a permanent basis agricultural production and stock-raising. Resp. Auth. : CILLS secretariat. Estimated cost 2.6 mECU. Studies for means to produce, collect and treat agricultural production and stock-raising data. T.A., vehicles and data collecting and processing equipment. Project stage: identification. 5th EDF.

Millet, maize, sorghum and niebé project. Resp. Auth. : CILLS Secretariat. Estimated cost 2 mECU. To provide improved varieties for farmers. Local tests. Purchase of vehicles and equipment and to take charge for local tests control staff. Project stage: identification. 5th EDF.

Setting up of a system to estimate cereal stocks in private hands. Resp. Auth. : CILLS Secretariat. Estimated cost .1 mECU. EDF 0.5 mECU FAC 0.5 mECU. Creation of a system to monitor permanently the global availability of food stocks. T.A. and equipment. Project stage: identification. 5th EDF.

Fight against drought in the Sahel. Resp. Auth. : CILLS Secretariat. Estimated cost 1 mECU. T.A. and experts for the CILLS Executif Secretariat. Project stage: identification. 5th EDF.

Regional coordination of food production and distribution of improved cooking stoves. Resp. Auth. : CILLS Secretariat. Studies on food marketing, pricing and trading. Studies and aids for improved cooking stoves distribution. Estimated cost 0.276 mECU. Project stage: identification. 5th EDF.

MEMBER COUNTRIES OF U.A.P.T.

Satellite telecommunications project. Resp. Auth. : U.A.P.T. Secretariat in Brazzaville. R.P.C. Parametric study on the way by national organisations of I, UK, F and D. Project stage: identification. 5th EDF.

MEMBER COUNTRIES OF ECOWAS

Wireless beam telecommunications. Resp. Auth. : Ecowas Secretariat. Estimated cost 32 mECU. EDF 5 mECU. Project on appraisal. 5th EDF.

EASTERN AFRICA COUNTRIES

Statistical training centre for eastern africa in Tanzania. Resp. Auth. : Secretariat of the centre. 2.0 mECU. Widening of the capacity. Construction of class-room, offices and housing. Project stage: identification. 5th EDF.

DJIBOUTI — ETHIOPIA — KENYA — SUDAN — SOMALIA — TANZANIA — UGANDA

Prevention against noxious migratory animals in eastern africa. Resp. Auth. : Desert Locust Control Organization for eastern africa. Construction of buildings, storage, for pesticide, aircrafts, equipment for vaporization, vehicles and T.A. Total estimated cost 6.634 mECU. EDF 3.3 mECU int. tender for equipment hangar in Nairobi launched. Other int. tenders in 83. T.A. : Centre for overseas Pest Research (UK). 5th EDF.

KENYA — TANZANIA

Regional Health Improvement Project. Resp. Auth. : Ministries of Health. Estimated cost 1.6 mECU. Extension of the regional centre at Nairobi and construction of a centre in Dar-es-Salam, T.A. Works: acc. tender. Contracts : direct agreement. Project in execution. 5th EDF.

ZAMBIA — KENYA — UGANDA — SUDAN

Field-oriented research on control of tsetse and livestock ticks of the International centre of insect physiology and ecology (ICIPE) Nairobi-Kenya. 4.4 mECU. EDF part 1.5 mECU. Cofunding with : UNDP-USAID-Switzerland and Netherlands. Supply of equipment. TA : G.T.Z. (D) Project in execution. 5th EDF.

KENYA — GAMBIA — SENEGAL

Ndama production research. Estimated total cost 13.620 mECU. EDF 2.5 mECU other sources ODA, Af.D.B. FAO. Research project to be implemented by ILRAD-ILCA (International Livestock Centre for Africa and International Laboratory for Research on Animal diseas). Supplies, T.A. and training. Project stage: identification. 5th EDF.

MEMBER COUNTRIES OF SADCC (South African development coordination conference)

Faculty of Veterinary Sciences University of Zimbabwe. Total estimated cost 9 mECU. EDF part estimated at 5 mECU. Construction of a new veterinary faculty as a regional institution within the existing university of Zimbabwe. Works and supplies. Int. tenders launched in August and September 83. Conditionals upon previsional finance. . 5th EDF.

T.A. for the SADCC Secretariat. Resp. Auth. : SADCC Secretariat in Gaborone. Botswana. 2 m ECU. Advisory Staff, consultancies, support staff. Decisions for contracts will be signed between SADCC and CEC. Project in execution. 5th EDF.

SWAZILAND — LESOTHO

Matsapha Airport. Construction of a control tower, equipment and T.A. Estimated total cost: 31 mECU. EDF 2.1 mECU. Int. tender foreseen end 83. Project in execution. 5th EDF.

BOTSWANA — LESOTHO — MALAWI — SWAZILAND

Multi-country post-telecommunication training scheme. Resp. Auth. : Postmaster general of 4 countries. 0.650 mECU. Training and supply of equipment. T.A. managed by I.T.U. Supplies : int. tender. Project on appraisal. 5th EDF.

MEMBER COUNTRIES OF CARICOM

Development of the regional trade promotion services in the Caribbean region. Resp. Auth. : Caricom Secretariat. 1.8 mECU. T.A. project. Contract: direct agreement. 5th EDF.

Assistance to Caribbean Agricultural Research and Development Institute (CARDI). Resp. Auth. : CARDI Secretariat. EDF part 3.035 mECU. T.A. equipment and training. T.A. : Short-list already drawn up. 5th EDF.

Windward Islands fishing boat project. Resp. Auth. : Caricom Secretariat. Estimated cost 0.345 mECU. EDF part 0.275 mECU and 0.070 mECU from sales of boats. Equipment and TA for the construction of about 100 fishing boats and workshop installation. Project on appraisal. 5th EDF.

Regional hotel trade school in St Lucia. Resp. Auth. : Caricom Secretariat. Estimated total cost 0.900 mECU. EDF 0.200 mECU. Work financed locally. EDF part : supply of pedagogical equipment, furniture and 1 vehicle. Project on appraisal. 5th EDF.

Regional poultry project. Resp. Auth. : Caribbean Food Corporation (CFC) and Government of Barbados. Total estimated cost 4.147 mECU. EDF 2.823 mECU. Constructions, equipments and T.A. Project in execution. 5th EDF.

Regional marketing of agricultural inputs. Resp. Auth. : Caribbean Food Corporation. (CFC). 2.3 mECU. Supply of fertilizers and seeds. Works and equipments. Supplies : int. tender in 83. Project in execution. 5th EDF.

Research development in the Caribbean region. (CTRC). Resp. Auth. : Caricom Secretariat 4.100 mECU. T.A. marketing and tourism promotion. Project in execution. 5th EDF.

Regional tourism promotion study. Resp. Auth. : Caricom Secretariat. Caribbean Tourist Association. 0.800 mECU. Studies tourist promotion. Short-lists not yet drawn up. Project in execution. 5th EDF.

Assistance for Point-Salines International Airport-Grenada. Resp. Auth. : Caricom Secretariat and Grenada Int. Airport Authority. EDF part 1,740 mECU, T.A. and supply of radio and electronic navigational equipment. T.A. by direct agreement. Equipment by int. tender. Date foreseen for financial decision end '83. 5th EDF.

TANZANIA (BURUNDI — RWANDA — ZAIRE — ZAMBIA)

Tanzania Railways Corporation Project (T.R.C.). 10 mECU. Maintenance and improvement of the railway. Works, supply of equipment. Supply : int. tender launched in May '83 Supervision of works : short list not yet drawn up. 4th EDF.

BURUNDI — RWANDA — TANZANIA — ZAIRE — ZAMBIA

Dar es Salam port project. Improvement of the transit goods handling facilities, for the Central Corridor transports. Supply of equipment and T.A. 2 mECU. Int. tender launched on March 83 conditional upon provisional finance. Date financial decision October '83. 5th EDF.

TANZANIA — UGANDA

Transport project Lake Victoria. Improvement of the existing wagon ferry terminal facilities in Jinja, Mwanza, Bukoba and Musoma ports. 2 mECU. Int. tender launched on March 83 conditional upon provisional finance. Date financial decision October '83. 5th EDF.

KENYA — UGANDA — RWANDA — BURUNDI

25 tankcars for the Uganda Railways. Resp. Auth.: Uganda Railways Corporation. Estimated cost 2.5 mECU. Int. tender conditional upon provisional finance launched in July 83. Project on appraisal. 5th EDF.

MEDITERRANEAN COUNTRIES

ALGERIA

Scientific cooperation programme with O.N.R.S. and trainers' training. Resp. Auth.: Ministère de l'Enseignement Supérieur et de la Recherche Scientifique (M.E.S.R.S.) 4.3 mECU. Scholarships, T.A. experts and supply of equipment. For scientific equipment int. tender launched in July 83.

Training of technicians for rural development and hydraulics. Resp. Auth.: Ministère de l'Agriculture. 1.440 mECU. T.A. and training. For T.A.: int. tender after prequalification. Project on appraisal. Date foreseen for financial decision October 83.

EGYPT

Soil improvement programme in Kafre-el-Sheikh Governorate. Resp. Auth.: Executive Authority for Land Improvement Projects (EALIP). Provisional amount 8 mECU. To reclaim an area of 65 000 acres of saline soil, located in Hamoul district of the Kafre-el-Sheikh Governorate. Short-list already drawn up. Project in execution.

Improved of agricultural input storage facilities in the Daqhalia Governorate. Resp. Auth.: Principal Bank for Development and Agricultural Credit. EEC Contribution 6 mECU. Construction of 13 new ware houses on prefabricated steel of 1 700 m^2 each providing a total capacity of 27 000 T. Works: int. tender foreseen in 4th quarter '83.

Egyptian Renewable Energy Development Organisation. EREDO. Resp. Auth.: Egyptian Government. Estimated total cost 10.74 mECU. EEC contribution 7.7 mECU. Construction and equipment for the centre. Works and supplies: int. tender in '83. Date financial decision August 83.

JORDAN

2 Trade Training Centres (TTC). Resp. Auth.: National Planning Council (NPC) and Vocational Training Corporation. Cost estimate 1.2 mECU for EEC. The TTCs offer apprenticeship in cooperation with local trade and industry. One TTC for about 400 boys at Zarqa. One TTC for bout 400 girls in Amman. Buildings to be financed by Jordan. Training and TA programmes also. Study to identify and define project, TEMA Consultant (I). Supply: int. tender for Zarqa launched February '82. Project in execution.

★ **Secondary Industrial School at Madaba.** Resp. Auth.: Ministry of Education (M.D.E.) EEC part 1.6 mECU. Supply of pedagogical equipment and T.A. Supplies by int. tender. Date foreseen for financial decision December 83.

LEBANON

Industrial planning and industrial census. Resp. Auth.: Ministère de l'Industrie. 0.518 mECU. Foreign expert to supervise local experts for census. Mission in Lebanon 2 months EEC contribution covers all expenses for foreign expert and ±50% of total cost of the project. Project on appraisal.

Aid for the Union Nationale de Crédit Coopératif (UNCC). 1.4 mECU. Line of credit to the UNCC and T.A.

Document automatization for the Chambre de Commerce et de l'Industrie de Beyrouth (CCIB). Resp. Auth.: C.C.I.B. 0.24 mECU. Supply and T.A. For equipment int. tender in '83. T.A.: M. Savitsky (F).

MALTA

Upgrading St Lukes's Hospital radiology department. Training, TA and supply of equipment. Estimated cost 1.23 mECU. Int. tender for equipment launched in September 83.

MOROCCO

Interventions for Laboratoire de Technologie des céreales de Rabat. Resp. Auth.: Ministère de l'Agriculture. 0.790 mECU. Equipment, T.A. and training. Supply by restr. tender or direct agreement. T.A.: short-list not yet drawn up.

★ **Reabsorption of Salé "bidonville".** Resp. Auth.: Gouvernement du Maroc. Estimated total cost 30.6 mECU. EEC part 18 mECU, local 12.6 mECU. Water, roofs infrastructure, sanitation, electricity, sewage works. Int. tender (conditional) foreseen end 83. Date foreseen for financial decision 1st quarter 84.

TUNISIA

Participation to create 3 Training Vocational Centres: in Nabeul, Menzel-Bourguiba, Zaghouan. Resp. Auth.: O.T.T.E.E.F.P. (Office des Travailleurs Tunisiens à l'Etranger de l'Emploi et de la Formation Professionnelle.) EEC Contribution 3.870 mECU. Supply of equipment, T.A. and training. Supplies: int. tender for Menzel-Bourguiba launched in October 82. T.A.: A.A.B. (D).

Technical and scientific cooperation. Marine science. Resp. Auth.: Ministère de l'Enseignement Supérieur et de la Recherche Scientifique. 0.240 mECU. Supply of equipment, training and T.A. Supplies: int. tender and direct agreement. T.A. and training: direct agreement. Date financial decision July 83.

TURKEY

Electricity transmission line project. Resp. Auth.: Turkish Electricity Authority. (TEK). Estimated cost 72 mECU. EEC 16 mECU. Upgrading of existing transmission lines and supply of equipment. Construction of new transmission lines. Italian aid foreseen for 5.2 mECU. Supply and works: int. tenders in 83 or 84. Project on appraisal.

Non-associated developing countries

MOZAMBIQUE

Artisanal Fisheries Development. Resp. Auth.: Secretary of State for Fisheries. 2.958 m ECU. Provision of fishing material and other supplies for artisanal fisheries. T.A. Project in execution.

Potatoes seed production project. Resp. Auth.: Ministry of Agriculture. 7.100 mECU. Works, supplies, equipments, training and T.A. Supplies: int. tender. Date financial decision May 83. Technical study: K.W.S. (D).

BANGLADESH

Tea rehabilitation project. Resp. Auth.: Bangladesh Tea Board (BTB). EEC 6.6 mECU, UK and Local 55.68 mECU. Purchase of machinery for tea factories. Call for quotation in EEC member states and Indian subcontinent in 1983.

Small-scale irrigation sector project. Resp. Auth.: Bangladesh Water Development Board (BWDB). Estimated total cost 82 mECU. EEC contribution 12 mECU. Cofinancing with ADB (Asian Dev. Bank). Works, supply of equipment and vehicles, T.A. and supervision. Works: acc. tender. Supplies: int. tender, 2nd half '83.

Building of storage for fertilizers. Resp. Auth.: Bangladesh Agricultural Development Corporation (BADC). Cofinancing: EEC and Netherlands. Total cost 4 mECU. EEC 2 mECU Netherlands 2 mECU. EEC part: Works by int. tender. Netherlands part: buildings and T.A.

Supply of fertilizers. Resp. Auth.: BADC. EEC 15 mECU int. tender 2nd half 83. Financial decision July 83.

Bhola irrigation project. Resp. Auth.: Bangladesh Water Development Board (BWDB). Estimated total cost 44.4 mECU. EEC 3 mECU. Parallel cofunding with A.D.B. (Asian Dev. Bank). Works, equipment and supply of vehicles, pumps and fuel. T.A. and training. Project in execution.

BHUTAN

Plant protection services. Resp. Auth.: Ministry of Development (Agricultural Department). 3.4 mECU. Building of laboratories, equipments training and T.A. Works:

acc. tender. Supplies: int. tender or direct agreement. Project in execution.

BURMA

Palm oil development. Resp. Auth.: Ministry of Agriculture and Forest. Estimated cost: 16.3 mECU. Financing: EEC 4.9 mECU. Switzerland and local 11.4 mECU. Expanding production for domestic consumption. Supplies and T.A. Supply: int. tender in 83. T.A.: shortlist already drawn up.

★ **Rural water supply and sanitation outside the dry zone.** Resp. Auth.: Ministry of Agriculture and Forests and Ministry of Health. Estimated total cost 11.5 mECU. EEC part 2.5 mECU. Germany and Canada via Unicef 1.68 mECU and 0.850 mECU. Local 6.470 mECU. Works and supply of equipment for wells. Works by direct labour supplies by int. tender and direct agreement. Date foreseen for financial decision December 83.

INDONESIA

Baturraden Dairy Development. Resp. Auth.: D.G. for livestock services. Estimated cost: 8.385 mECU. EEC 4.4 mECU, Italy 0.410 mECU. Construction, infrastructure, supply of equipment, T.A. Works and supplies: int. tender 2nd half '83. T.A.: IFAGRARIA (I).

Bali Irrigation Sector Project. Resp. Auth.: Ministry of Public Works. DG for Water Resources Development. EEC 12 mECU. ADB ±37 mECU. Local ±55 mECU. Rehabilitation and expansion of 50 village-level irrigation scheme, establishment of a water-management training centre, and establishment of climatological stations. T.A. Works: acc. tender.

T.A. to Bank Indonesia for SEDP II. Resp. Auth.: Bank Indonesia. Total estimated cost 12.5 mECU. EEC 8.3 mECU. Local 4.2 mECU. Expatriates and local consultants. T.A. and training in Bank Indonesia regional offices to implement Bank's large ongoing programme of small-scale credits. Consultants will be contracted by Bank Indonesia, after approval by the Commission, on the basis of tender or mutual agreement procedures. Project in execution.

Pilot Project for Artisanal Fisheries in East Java. Resp. Auth.: Directorate General of Fisheries (DGF). Total cost 4.880 mECU. Parallel cofinancing with Italy. EEC 3.178 mECU. Italy 0.876 mECU, Local 0.826 mECU. Works, equipment and supplies. Works by direct labour. Supplies: int. tender and direct agreement. Supply of refrigeration equipment: Italy. T.A.: direct agreement. Project in execution.

Madura groundwater development. Resp. Auth.: Ministry of Public Works. DG for Water Resources Dev. Total cost 19.3 mECU. EEC part 13.10 mECU, U.K. 2 mECU, Local 4.2 mECU. EEC part: supply of pumps, drilling equipment, vehicles, casing and screening and local T.A. U.K. part: expatriate T.A. Supplies: int. tender. Date foreseen for financial decision October '83.

INDIA

Supply of fertilizers. Resp. Auth.: Minerals and Metals. Trading Corporation of India. MMTC. 45 mECU. Int. tender launched in September 83. Project in execution.

Pilot project for village trout fish farming in Jammu and Kashmir. Resp. Auth.: Department of Fisheries of Jammu and Kashmir. EEC 1 mECU. Local 0.370 mECU. Works, equipment, T.A. and training. Works by direct labour or acc. tender. Supplies: restr. tender with specialized companies. T.A.: direct agreement after short-list. Date financial decision July 83.

★ **State Centres for training for rural Development.** Resp. Auth.: Ministry of Rural Development (MRD). Construction improvements and supply of equipment for centres in 22 states. EEC part 6.5 mECU. Works and supplies by acc. tenders. Date foreseen for financial decision December 83.

★ **Modernisation of tank irrigation systems in Tamil Nadu.** Resp. Auth.: Public Works Department (P.W.D.) and Agricultural Department of the State government of Tamil Nadu. EEC part 25 mECU. Works by direct labour or acc. tenders. Supplies by acc. tenders. Date foreseen for financial decision December 83.

PAKISTAN

Solar energy for rural areas. Resp. Auth.: Ministry of Petroleum and Natural Resources (DGER). EEC 1.8 mECU. Supply of solar power stations. Int. tender launched in September 83.

Karachi fishing port. Resp. Auth.: Fishery department of the Sind Province. Estimated cost 12 mECU. New facilities: quay, boat repair yard, fish-shed, dredging. Rehabilitation of existing facilities, equipments and TA. TA: int. tender after prequalification. Works and supplies in 83 or 84.

NEPAL

Rural water supply and health infrastructure. Resp. Auth.: MPLD (Ministry of Panchayat and Local Development) and DWSS (Department of water supply and sewage). 4.8 mECU. EEC 3.7 mECU Local 1.1 mECU. Supply of equipment (pipes, tubes, manual-pumps, vehicles) and T.A. Management by UNICEF for EEC contribution. Supplies: int. tender or direct agreement. Date foreseen for financial decision 2nd half 83.

★ **Supply of fertilizers.** Resp. Auth.: Agriculture Input Corporation (AIC). 5.3 mECU. Supply of composed fertilizers by int. tender. Date foreseen for financial decision December 83.

SRI LANKA

Integrated rural development in the Mahaweli Ganga region. Resp. Auth.: Mahaweli Development Board (MDB). Estimated cost 9 mECU, EEC 2 mECU. Development of 2 326 ha irrigated land and rehabilitation of 1 910 ha deteriorated land. Socio-economical infrastructure to allow settlement of 12 000 rural families. TA: FAO. Project in execution.

THAILAND

Cooperation training and marketing. Resp. Auth.: National Economic and Social Development Board (NESDB) and Bank for Agriculture and Agricultural Cooperation (BAAC). EEC 3.037 mECU. To provide traning facilities for the personnel of agricultural cooperatives and equipment for cooperative marketing unit. Int. tender in '83 for supplies. T.A.: Clear unit (UK).

Rubber smallholdings yield improvement. Resp. Auth.: Rubber Research Centre (RCC). Ministry of Agriculture and Cooperatives. EEC 1.8 mECU, Local 1.8 mECU. To introduce and popularize new tapping techniques to improve the yield of old rubber trees before their felling. TA: Harrison Fleming (UK). Tenders in mid '83 or '84.

Seed production centre for the Southern Region. Resp. Auth.: Ministry of Agriculture, Estimated Cost: 3 mECU. EEC 2.2 mECU. Construction of a centre for the production and distribution of improved qualities of rice seeds. Equipments and T.A. Works and infrastructure: acc. tender. Equipments: int. tender in launched in September 83. T.A.: Euroconsult (NE).

Oilseed crop development programme. Resp. Auth.: Ministry of Agriculture — Oil seed Project Steering Committee. Total estimated cost 4.2 mECU. EEC 3.3 mECU. T.A. and supply of equipment. T.A.: Short-list not yet drawn up.

Agricultural cooperatives training. Resp. Auth.: National Cooperative Development Committee (NCDC) and National Agricultural Cooperative Training Institute (NACTI). Total cost 7.88 mECU. EEC 5.44 mECU. EEC part: supply of equipment (vehicles, pick-up, motorcycles; projectors, tape-recorders and video equipment) by int. tender. T.A. Date financial decision September '83.

THE PHILIPPINES

Palawan integrated area development. Resp. Auth.: National Council on Integrated Area Development (NACIAD). Total cost 78 mECU, EEC contribution 7.1 mECU, ADB 43.05 mECU and GOP 27.85 mECU. Small-scale irrigation works, agricultural intensification and diversification, livestock, transport development, health facilities, training and monitoring. Project duration 1982-1988. Works: partly int. tender, partly direct agreement or acc. tender. Supplies: int. tender or direct agreement. Administrative arrangements, excluding EEC int. tenders, concern full responsibility of ADB. T.A.: short-list already drawn up.

MALDIVES

★ **Male water supply and Sanitation.** Resp. Auth.: Maldives Water supply Agency (M.W.S.A.). Study on the way by Binnie and Partners (UK).

ASEAN

Regional collaborative programme on grain post-harvest technology. Resp. Auth.: Sub-committee on Food Handling (SCFH). Cost 4.3 mECU. EEC 4.3 mECU. T.A., training and research. For supplies: int. tender or direct agreement to be determined. T.A. to be decided by S.C.F.H. Short-list not yet drawn up.

INTERIM MEKONG COMMITTEE

T.A. to Mekong Secretariat. Resp. Auth.: Mekong Secretariat. 0.75 mECU. Experts recruitment to prepare irrigated agriculture and forestry projects. Supply of equipment and materials. T.A. contracts by the Mekong Secretariat after CCE approval. Financial decision July 83.

DOMINICAN REPUBLIC

T.A. for agrarian reform and integrated rural development. Resp. Auth.: Instituto Agrario Dominicano (I.A.D.). Total cost 13.6 mECU, EEC 12 mECU, Local 1.6 mECU. Infrastructure, equipments, T.A. and training. Supplies: int. tender or acc. tender or direct agreement. Works: direct labour or acc. tender. T.A.: short-list already drawn up. Project in execution.

HAITI

Integrated rural development of Asile region. Présidence de la République. Estimated cost: 12 mECU. Foreseen financing: EEC 5 mECU, IDB 7 mECU. Feeder roads, rural monitoring, irrigation, social infrastructure. Works by direct labour. Supply: int. tender in '84.

Integrated rural development of Jeremy region. Resp. Auth.: Présidence de la République. Total cost 7.4 mECU, EEC 6.6 mECU, Local 0.800 mECU. T.A. works, equipments and training. T.A.: contracts made by the Commission after government agreement. Supplies: int. tender. Works: direct labour. Project in execution.

NICARAGUA

T.A. for agrarian reform and integrated rural development. Resp. Auth.: Ministerio de la Agricultura e de la Riforma Agraria (MIDINRA). Total cost 12 mECU. EEC 9.8 mECU. Local 2.2 mECU. Infrastructure, equipments and T.A. Equipments: int. tender. T.A.: short-list already drawn up. Project in execution.

Waslala regional development. Resp. Auth.: MIDINRA. Total cost 8.5 mECU. EEC 3.5 mECU. Local 5 mECU. Road infrastructure and social. Supply of agricultural equipment. T.A. Roads by direct labour. Supplies: int. tender or acc. tender or direct agreement. T.A.: AGRER (B). Works: direct labour or acc. tender. Project in execution.

Crop development. Resp. Auth.: Ministerio de la Agricultura e de la Riforma Agraria (MIDINRA). Total estimated cost 19.930 mECU. EEC 7.400 mECU. Studies, monitoring, training, supply of equipment and T.A. Supply: int. tender or acc. tender according to importance or urgency. Contract: CONSULINT (I). Project in execution.

NICARAGUA — HONDURAS

Bridges reconstruction. Resp. Auth.: Ministry of Public Works. 3.2 mECU. Reconstruction of 3 bridges. Works, T.A. and site supervision. Date foreseen for financial decision 2nd half 83.

BOLIVIA

Irrigation Programme Altiplano-Valles (Cochabamba). Resp. Auth.: Service National de Développement Communautaire (S.N.D.C.). Cost: 9 mECU. EEC 2 mECU, KFW (F.R.G.) 6 mECU, Local 1 mECU. Construction of small dams and irrigation canals. Works by direct labour.

Rural microprojects. Resp. Auth.: Corporation de Développement de Potosi (CORDEPO) and Corporation de Développement d'Oruro (CORDEOR). Total cost 18 mECU. EEC 16 mECU. Drinking water supply, roads, lines of credit, T.A., training. Works by direct labour or acc. tender. Supplies: int. tender or acc. tender. T.A.: direct agreement by CCE. Financial decision July 83.

HONDURAS

T.A. for agrarian reform and integrated rural development. Resp. Auth.: Instituto Nacional Agrario (I.W.A.). Total cost 17.7 mECU. EEC 16.9 mECU. Local 0.8 mECU. Infrastructure, supplies, equipments and T.A. Works by direct labour or acc. tender. Supplies: int. tender or acc. tender or direct agreement. T.A.: BOOM (NL). Project in execution.

COUNTRIES MEMBERS OF PACTO ANDINO

Technical cooperation (industry and economical planning). Resp. Auth.: Junta del Acuerdo de Cartagena, Lima-Peru. Estimated total Cost: 1.7 mECU. EEC 1.1 mECU. To place experts, equipment and T.A. and training at Junta's disposal. Contracts T.A. and experts by the Junta and the Commission of EC.

Andean Programme for technological development (Rural PADT). Resp. Auth.: Junta del Acuerdo de Cartagena, Lima-Peru. Estimated total Cost: 7.560 mECU. EEC 3.927 mECU. Supply of equipment, training and T.A. Vehicles purchase: int. tender. T.A.: Short-lists to be drawn up by the Commission of EC and decision by the Junta.

Energy cooperation. (Analysis and planning). Resp. Auth.: Junta del Acuerdo de Cartagena. Total estimated cost 0.66 mECU. EEC 0.50 mECU. T.A. and Training.

Applied agricultural research (maize and corn). Resp. Auth.: CIMMYT (Centro Internacional de Mejoramiento Maiz y Trigo) Mexico — Decentralized actions in the andean region. Research and training. 2 mECU. Project in execution.

Regional project for industrial timber promotion. Resp. Auth.: Junta del Acuerdo de Cartagena. Total cost 12.610 mECU. EEC 6 mECU. Industrial promotion, vocational training, rural buildings and housing. T.A.-Works: direct labour or acc. tender. Supplies: int. tender or acc. tender or direct agreement. T.A.: choice by the JUNAC on the basis of short-list proposed by CCE. Financial decision July 83.

COSTA RICA — HONDURAS — NICARAGUA — PANAMA — DOMINICAN REPUBLIC

Latin American qualified nationals reinstatement in 5 Central American countries. Resp. Auth.: CIM (Comité Intergouvernemental pour les migrations). 1.4 mECU. Reinstatement of 75 qualified nationals via CIM. Date foreseen for financial decision 2nd half 83.

COSTA RICA

T.A. for agrarian reform and integrated rural development. Resp. Auth.: Ministerio de la Agricultura. Total cost 25.8 mECU. EEC 18 mECU. Local 7.8 mECU. Infrastructure, equipment and T.A. Works by direct labour or acc. tender. Supplies: int. tender or acc. tender or direct agreement. T.A.: SCET-AGRI (F). Project in execution.

PERU

Pilot project Majes. Irrigation. Resp. Auth.: Autoridad Autonoma del Proyecto MAJES (Autodema). Total cost 17 mECU. EEC 5.6 mECU, Italy 2 mECU, Local 9.4 mECU. Supply of equipment and inputs, T.A. and credit system. Date foreseen for financial decision October '83.

★ **Rural investments programme. (Micro-regions in Cusco).** Resp. Auth.: Corporation Departimentale de desarollo de Cuzco (CORDECUZCO) and (PRODERM) Proyecto de Desarollo Rural en Microregiones. EEC part 6 mECU. Works and supply of equipment for forestry, natural resources, infrastructures, monitoring and research. Works by direct labour or acc. tenders. Supplies by int. tenders or acc. tenders. Date foreseen for financial decision December 83.

CENTRAL AMERICAN ISTHMUS (HONDURAS — PANAMA — NICARAGUA — COSTA RICA)

Support for peasant producer association. Resp. Auth.: Istituto Interamericano de Ciencas Agricolas (I.I.C.A.). Total cost 2.9 mECU. EEC contribution 1.6 mECU. Parallel cofinancing with the French Republic and the governments concerned. T.A. and training. T.A. contract: IRAM (F).

YEMEN ARAB REPUBLIC (YAR)

Seed production project. Resp. Auth.: central Agricultural Research Station (CARS). Total cost 6.600 mECU. EEC 5.200 mECU. Construction of 5 centres, supply of equipment, T.A. and training. Works: acc. tender. Supplies: int. tender or direct agreement according to importance. T.A.: K.W.S. (D).

★ **Dhamar Rehabilitation Project.** Resp. Auth.: The Executive office for Reconstruction. EEC part 2.55 mECU. Supply of equipments and T.A. to support the self help house reconstruction effort after the earthquake of December 82. Date foreseen for financial decision December 83.

★ **Al Baydau integrated rural development.** Resp. Auth.: Ministry of Agriculture and Rada integrated Rural Development Project Organization. EEC part 2.74 mECU. Improvement of crop and livestock production, road infrastructure and drinking water supplies. T.A. All by direct labour. T.A. by direct agreement. Date foreseen for financial decision December 83.

YEMEN (PEOPLE'S DEMOCRATIC REPUBLIC)

Flood damage reconstruction Dhalla. Resp. Auth.: Ministry of Agriculture. Irrigation Department. 2.5 mECU. Reconstruction of flood damaged irrigation systems and open wells. Installation of flood-warning system. Supply of equipment. T.A. equipment: int. tender T.A.: on proposal of the Commission after agreement by PDRY Government. Project in execution.

NON ASSOCIATED DEVELOPING COUNTRIES

Preparation and follow up of the development project and programmes. Resp. Auth.: Commission of the European Communities. 4 mECU. Study and T.A. Long and short term experts recruitment. Studies. Date foreseen for financial decision, 2nd half 83.

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co-operative or prospective co-operative founders and members ought to have.

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Jean-Marc ELA — **L'Afrique des villages** (Village Africa) — Editions Karthala, 22-24, bvd Arago, 75013, Paris, France — 228 pages — FF 68 — 1982

Jean-Marc Ela was born in Ebolowa, in Cameroon, in 1936. After studying philosophy, sociology and theology (in which he gained a state doctorate) he went, in 1971, to live among the Kirdi peasants of northern Cameroon and has been there ever since.

He points out that African leaders have been talking about rural development for the past 20 years. What country has not brought in a policy of agricultural back-up services? Child and adult education schemes have been run, courses have been organized and training centres have been built with the help of official organizations and private cooperation officers.

But we have to realize, says the author, that these modernization schemes have only emphasized the internal tension of the societies that have been pulled into the market economy. Conflict between old and young, town-dwellers and city-dwellers, farmers and herdsmen is being accompanied by the formation of social groups with diverging interests. Around the all-powerful state structures, an urban minority has sprung up with powers and privileges that are being extended to the detriment of the peasant masses.

Mr Ela gives an honest analysis of the realities of a situation which will be explosive tomorrow. No village motivation or extension scheme can succeed while there is still the internal and external machinery of domination and exploitation. In the African peasants' struggles and their ability to get organized lies one of the keys to the future.

ooo

Pierre SALAMA, Patrick TISSIER — **L'industrialisation dans le sous-développement** (Industrialization in under-development)—François Maspero, 1 place Paul-Painlevé, Paris V^{e} — 30 FF — 212 pages — 1982

"Under-development" in the Third World has often been explained in terms of halted industrialization. This book, which argues an opposing viewpoint, shows that industrialization can be compatible with perpetual "under-development".

On the basis of field investigation, the authors analyse in detail how industrialization was initially introduced and the specific forms of exploitation of workers in 11 South-East Asian and Latin American countries. There is detailed study of the means of adapting production.

Accessible to non-specialists, this book comprises four studies by the authors—chosen from among those which have provoked most debate—and two other unpublished studies. These studies deal with semi-industrialization and with the special type of management needed in the type of labour force that is predominant in the economies of the countries in question. This original collection, which questions a great deal of conventional wisdom, will make a valuable contribution to the much-debated subject of North-South relations.

ooo

Ernesto SCHIEFELBEIN — **Educational financing in the developing countries: research findings and contemporary issues** — International Development Research Centre, Box 8500, Ottawa, Canada KIG 3H9 — 149 pages — 1983

Education is generally recognized as a cardinal factor in development. However, in the face of limited resources, many developing countries now have the difficult task of devising effective educational policies, and even of recognizing the most pressing and attenable priorities.

This publication by the IDRC will be of immense help in guiding them in decision-making. The book is the result of the study, which was decided upon at a meeting in Jamaica in January 1980 by IDRC's review group executive committee.

The study shows that because of the increase in percentage of the GNP devoted to education in the developing countries over the past two decades, policy makers and administrators have begun to pay more attention to the sources of funding and to increase the debate on whether education should be a public responsibility or a private concern.

In the developing countries, most of the recent efforts in education have been made by the state. However, any further increase in state expenditure on education will lead to a reduction in resources for other vital sectors, necessary for the economic survival of the country, unless there is a real increase in the government's share of the GNP. In the present international economic climate any increase is unlikely to be great in the coming years and therefore the state will continue to be unable to increase educational expenditure. It may, however, turn to the private sector for additional funds. This book suggests a number of ways of securing funds or improving the quality and quantity of education without incurring heavy expenditure.

THE COURIER

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4th page cover: ***Three farmers using fertiliser in Kwara state, Nigeria (photo FAO)***

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