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Summary Report of Workshop on
The Role of Science and Technology in
The Economic Development of the Democratic
Republic of the Congo during the 1970's

Kinshasa, Democratic Republic
of the Congo

7 - 11 June 1971

Jointly Sponsored by the
National Office for Research and Development
Congo-Kinshasa

and

The National Academy of Sciences
United States of America

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Reference Center
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This report is a staff summary of issues discussed and recommendations made at the Congo - U.S. Workshop on The Role of Science and Technology in the Economic Development of the Democratic Republic of the Congo during the 1970's. The Workshop was held 7 - 11 June 1971 in Kinshasa under the joint auspices of the Board on Science and Technology for International Development, Office of the Foreign Secretary of the National Academy of Sciences, and the National Office for Research and Development (ONRD) of the Democratic Republic of the Congo (now Zaire). The report is submitted to the Agency for International Development under contract AID/csd-2584, Task Order 1.

A record of the Proceedings in French is to be issued by the ONRD and will be transmitted to AID.

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I

INTRODUCTION

Discussions regarding a possible program of scientific cooperation between the National Academy of Sciences (NAS) and the Democratic Republic of the Congo (R.D.C.) were initiated in January, 1970. An exchange of visits between NAS staff and Congolese science officials led to an agreement in January, 1971, on institutional arrangements.

The Office National de la Recherche et du Developpement (ONRD) accepted the responsibility for coordinating the Congolese interests and efforts and requested that the NAS collaborate in conducting a Workshop "to determine and articulate how the scientific and technical resources of the Congo could best be developed and mobilized in the decade of the 1970's to help that nation attain its long-term developmental goals."

Financial support of the Workshop was provided jointly by the Agency for International Development (AID) through NAS and by the Government of the Democratic Republic of the Congo through ONRD.

The Workshop was held June 7 - 11, following a briefing session for U.S. participants held in Washington May 17 and a series of pre-Workshop visits May 28 - June 5 to sites of scientific and technological interest in the Congo. During the Workshop the participants--ten U.S. panel members and altogether about thirty Congolese scientists, technologists, educators, research administrators and government officials*--sought

* The Congolese side included a number of expatriate technical assistance personnel.

the following objectives:

1. To emphasize relationships between economic development and policies for investment in science and technology;
2. To consider policies to strengthen the capacity of the scientific and technical infrastructure to promote the optimal development of natural resources;
3. To examine research and extension capacities for Congolese agricultural development;
4. To examine the need for, and identify factors which might inhibit, the training of scientific and technical personnel required for development;
5. To identify and examine priority problems associated with nutrition and food in the Democratic Republic of the Congo;
6. To identify a set of priorities for research-and-development support during the 1970's;
7. To formulate a set of recommendations to strengthen the organization of a system for research-and-development support; and
8. To formulate a strategy for implementing recommendations, including those requiring bilateral and multilateral technical collaboration.

: Five commissions were established to consider the following agenda topics:

1. Agricultural Development
2. Human Resources Development
3. Natural Resources Development
4. Science Policy and Planned Economic Development
5. Food and Nutrition

Four of the commissions met formally for two half-day sessions (the Commission on Natural Resources met four times); some continuing their deliberations for many hours beyond the officially scheduled periods. Each commission concluded its work with a set of recommendations addressed to the group as a whole for consideration in plenary session. The ONRD and the NAS then proceeded to select for immediate attention those items from among the commission recommendations that had the greatest urgency and the highest potential for near-term implementation, and, in particular, that lent themselves to further joint effort.

The NAS has been informed by the ONRD that the Workshop recommendations were immediately transmitted to the Office of President Mobutu.

II

RECOMMENDATIONS

Following are the recommendations formally adopted by the Workshop at its concluding session, June 11, 1971.

Agriculture

The Workshop recommends that:

1. In order to develop an agricultural economics program in the Democratic Republic of the Congo, a working group composed of representatives of ONRD, the Ministry of Agriculture, the Congolese universities, and a group of agricultural economists selected by the National Academy of Sciences be constituted to analyze as soon as feasible the following problems:
 - a. The number of agro-economists needed to provide the Ministry of Agriculture and the Congolese universities with an adequate staff;
 - b. The research projects for agro-economics, at the macro- and micro-economic levels, that merit high priority;
 - c. The necessary policies to create rapidly a cadre of Congolese agro-economists, for both government service and service as teachers and researchers in the universities;
 - d. The level of financial aid needed to carry out objectives a, b, and c; and
 - e. Procedures to insure that the financial aid earmarked for agricultural economic development of the Congo is actually used for this purpose.

2. It would be desirable for the NAS to inform itself of arrangements currently being made between USAID and the R.D.C. Government for a training program for agricultural extension workers, to determine in which way the NAS might contribute its assistance.

Human Resources

Considering the intention of the R.D.C. Government to undertake systematic planning of its development effort, and taking into account the current absence of a general program for the training and utilization of human resources, the Workshop recommends that:

1. A working group composed of ONRD and NAS representatives meet in the near future to seek concrete answers to problems, particularly
 - a. Training of Congolese demographers--The Workshop emphasized the need to strengthen capabilities to provide required demographic training within the country (in an institution yet to be determined).
 - b. Demographic research--For purposes of detailed planning, the rather limited data obtained from "administrative" censuses make it indispensable that complementary census surveys be conducted throughout the country on a permanent basis. Such studies would determine especially the rate of population growth, migratory tendencies, employment, and modification of family and social structures.
2. The NAS send an expert to undertake a feasibility study for a research project similar to the "Tracer Project" carried out in Nigeria and Kenya to determine what happens to school dropouts, from primary grades to university, and to find means to train and orient these individuals into sectors reflecting national needs. Special attention should be given to harmonizing levels of training with levels of skills required.

Natural Resources

The Workshop recommends that

1. A joint ONRD - NAS working group be convened to formulate plans and make recommendations for the development and the strengthening of the geological services of the Congolese Government and of institutions capable of training, within the Congo, the necessary scientific personnel in the earth sciences, as well as technical personnel for the mineral extracting and processing industries. In preparation for this effort, the ONRD should evaluate the future needs of the Congo for personnel in these fields.

2. A group of not less than four Congolese scientists--from ONRD, Ministry of Agriculture, Institute for Scientific Research in Central Africa (IRSAC), Congo Institute for the Conservation of Nature (INCCN)--and an approximately equal number of American scientists meet in the near future to study the feasibility of establishing an anthropoid primate breeding and research center, focusing particularly on chimpanzees and dwarf chimpanzees. This group would study the means of creating a primatology center, visit possible sites, and prepare for a future meeting of an international committee. The primate center envisaged should have as an essential component of its program the training of Congolese scientists in such fields as reproductive biology, biochemistry, toxicology, metabolism, etc.

3. Subject particularly to the availability of funds and personnel--on both sides--a joint working group be established with the task of studying and evaluating energy resources and production, with special attention to

- a. Needs in this area;
- b. Current availabilities and reserves of energy (fossil, hydroelectric, nuclear, etc);
- c. Appropriate technology and financing; and

d. Types of utilization.

The study should utilize and develop further various reports already available.

Science Policy

The Workshop recommends that

1. ONRD undertake a study of patent policy and licensing, in view of the importance of innovation and invention in the economic and social development of the country. To this end, NAS will forward relevant documentation to ONRD.

2. Subject particularly to the availability of funds and personnel--
on both sides-- a joint working group be convened to study priorities in research likely to be feasible in the R.D.C. This group would also study and identify the fields, methods, and means for establishing a training program for Congolese scientific personnel, with the assistance of the NAS.

Nutrition

The Workshop recommends that

1. In view of the FAO recommendation to the Congolese Government relative to the establishment of a National Commission on Food and Agriculture, a single commission with specialized subcommittees be so established.

2. A study on the composition, cost, and production of foodstuffs in the various regions of the R.D.C. be undertaken. Results obtained from an ongoing and continuously updated survey will be used to identify the most urgent needs in the field of food technology and also to determine inexpensively, with the help of computers, the most nutritious combination of foodstuffs available seasonably or the year-round in the various regions of the Congo. The NAS will assist this effort by providing an appropriate computer program.

3. A research study on a weaning food be undertaken, based on natural resources available to the Congo, with the aid of specialists associated with the NAS Food and Nutrition Board.

4. With the collaboration of the NAS Food and Nutrition Board Committee on Food Protection, a study be undertaken on the structure, organization, and operation of an entity to be charged with the establishment and execution of a systematic regulatory program of food processing from the standpoint of chemical, physical, biochemical, and microbiological characteristics, as well as the establishment of quality standards and regulations for food processing and sale.

III

AGENDA AND PARTICIPANTS

Agenda

June 7, 1971

Opening Plenary Session

Message from the President of the Democratic Republic of the Congo,
Lieutenant General Joseph-Desire Mobutu

Address, President of the ONRD, chairman of the Congolese panel

Address, the chairman of the U.S. panel

Presentations on the following topics:

Science Policy and Economic Development, G. Baza, Lovanium University

Food and Nutrition

Nutrition, L. Phaka, Ministry of Social Affairs

Food Analysis and Control, W. Van Pee, Lovanium University

Food Industries, E. Fallah, Industrial and Applied Research
Center of the Congo (CRIAC)

Natural Resources

Plant Resources, J.J. Symoens, Official University of the
Congo, Lumumbashi/ONRD

Fish Resources, A. De Bont, Lovanium University, and
P. Kunkel, Institute for Scientific Research in Central
Africa (IRSAC)

Park Preservation, J. Verschuren, Congo Institute for the
Conservation of Nature (INCCN)

Energy Resources, J. Zakrzewski, ONRD Researcher

Mineral Resources, P. Antun, Lovanium University

Agricultural Resources, L. Mukendi, Secretary General,
Ministry of Agriculture

Planning Human Resources, A. Malanda, ONRD, Lovanium University

June 8, 1971

MORNING

Science Policy

Chairman: J. Ileo, President, ONRD

Rapporteurs: G. Baza, Lovanium University
Z. Dybczak, Tuskegee Institute

Food and Nutrition

Chairman: W. Van Pee, Lovanium University

Rapporteurs: E. Fallah, Center for Industrial Research
in Central Africa, University of the Congo
L. Phaka, Ministry of Social Affairs
E. Pariser, Massachusetts Institute of Technology

Discussion by above two commissions

AFTERNOON

Natural Resources

Chairman: J.J. Symoens, Official University of the Congo

Rapporteurs: A. De Bont, Lovanium University
J. Kunkel, IRSAC
R. West, Tufts University

Agricultural Resources

Chairman: L. Mukendi, Ministry of Agriculture

Rapporteurs: N. Loma, Ministry of Agriculture
C. Eicher, Michigan State University

Discussion by above two commissions

June 9, 1971

MORNING

Human Resources

Chairman: N. Takizala, ONRD

Rapporteurs: A. Malanda, ONRD
W. Rideout, Florida State University

Natural Resources (Energy)

Chairman: J.J. Symoens, Official University of the Congo

Rapporteurs: J. Zakrzewski, ONRD, Lovanium University
P. Dybczak, Tuskegee Institute

Discussion by above two commissions

AFTERNOON

Science Policy

Chairman: H. Brown, NAS

Rapporteurs: G. Baza, ONRD, Lovanium University
P. Dybczak, Tuskegee Institute

Food and Nutrition

Chairman: J. Carter, M.D., Vanderbilt University

Rapporteurs: E. Pariser, MIT
L. Phaka, Ministry of Social Affairs
E. Fallah, CRIAC

Discussion by above two commissions

June 10, 1971

MORNING

Natural Resources

Chairman: C. Djerassi, Stanford University

Rapporteurs: P. Antun, Lovanium University
J. Kunkel, IRSAC
A. De Bont, Lovanium University
R. West, Tufts University

Agricultural Resources

Chairman: J. McKelvey, Rockefeller Foundation

Rapporteurs: C. Eicher, Michigan State University
N. Loma, Ministry of Agriculture

Discussion by above two commissions

AFTERNOON

Human Resources

Chairman: D. Lockard, University of Maryland

Rapporteurs: W. Rideout, Florida State University
A. Malanda, ONRD

Natural Resources

Chairman: C. Djerassi, Stanford University

Rapporteurs: J. Kunkel, IRSAC
A. De Bont, Lovanium University
J. Zakrzewski, ONRD, Lovanium University
P. Antun, Lovanium University

June 11, 1971

MORNING Final Plenary Meeting (Discussion of resolutions)
AFTERNOON Concluding Session

List of Participants

Congolese Participants

Joseph Ileo, Chairman President, Office National de la Recherche et du Developpement (ONRD) Member of the Bureau Politique National Deputy Kinshasa	N. Hernu CRIAC Lumumbashi
P. Antun Professor (Minerals and Geology) Lovanium University Kinshasa	S. Kabeya Institute for Scientific Research in Central Africa (IRSAC) Bukavu
Christian Bajika Assistant Professor Official University of the Congo (UOC) Lumumbashi	F. Kama Counselor to the President Kinshasa
George Baza General Delegate, ONRD Professor (Economics) Lovanium University Kinshasa	P. Kunda Electrical Engineer National Electricity Corporation Kinshasa
A. De Bont Professor of Biology Lovanium University Kinshasa	P. Kunkel Director General Institute for Scientific Research in Central Africa (IRSAC) Bukavu
J. Dehasse Counselor, Ministry of Education Kinshasa	N. Loma Ministry of Agriculture Kinshasa
Emmanuel Djembi Engineer, Chemistry and Agricultural Industries Free University of the Congo (ULC)	Hubert Lukinda Director, Ministry of Education Kinshasa
Edmond Fallah Asst. General Delegate, ONRD; Director General, Center for Industrial Research in Central Africa (CRIAC); Professor Official University of the Congo Lubumbashi	A. Malanda Researcher, ONRD Kinshasa
N. Gerlagh Dean, Faculty of Agriculture Free University of the Congo (ULC) Kisangani	Felix Malu Secretary General, ONRD Professor (Applied Sciences) Lovanium University, Kinshasa
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	Jonas Muilambwe Former Director General Ministry of Education Kinshasa

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Director of the Family Section,
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ONRD Secretariat, Kinshasa

Z. Butsana, Coordinator
Professor, Lovanium University

S. Akawi
Researcher

Gh. Bitoma
Researcher

R. Mayomona
Researcher

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General Delegate, ONRD;
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Official University of the Congo
Lumumbashi

N. Takizala
Assistant General Delegate, ONRD
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Researcher

E. Pholo
Researcher

Th. Vuvu
Researcher

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IV

HIGHLIGHTS AND COMMENTS

Pre-Workshop Washington Briefing

Most members of the NAS panel gathered in Washington May 17, 1971, for a briefing session covering the current political and economic situation in the Congo, U.S. - Congolese relations, the AID program, and other matters relevant to their mission. Discussion also included proposed Workshop organization and procedures to be considered by the Congolese. With certain amendments made by the ONRD, these eventually were adopted as the framework for the Workshop. The following persons made presentations to the panel:

Samuel C. Adams, Jr.	Assistant Administrator Bureau for Africa Agency for International Development
Bill Long	Office of Science and Technology Bureau for Technical Assistance Agency for International Development
Barry Ballow	Congo Desk State Department
M. Mushobekwa	Economic Officer Embassy of the Democratic Republic of the Congo
W. Hayden	Economic Officer, Office of Central African Affairs Department of State
Luis deAzcarate	Congo Mission Chief World Bank
Robert West	Fletcher School of Law and Diplomacy Former Congo AID Mission Director
Renee Fox	University of Pennsylvania Sociologist specializing on the Congo

In addition, panel members were supplied with extensive briefing material obtained from the U.S. Government, World Bank, current journals, and other sources.

Pre-Workshop Visits

The NAS panel members, accompanied by the President of the ONRD and his chief ONRD associates, as well as several members of the Congolese Workshop panel, spent the week before the Workshop visiting a number of scientific and educational institutions, social development projects, as well as industrial and agricultural establishments. The visits, centered in Katanga, Kivu, and Kinshasa, gave the panel members a very useful insight into the state of Congolese capabilities and requirements. It bears noting that the ONRD and its head, Mr. Ileo, took great pains to ensure effective logistics and a balanced program for this tour.

The NAS panel's opportunity to spend a full week with the ONRD principals in very informal circumstances proved extremely helpful in establishing a close working rapport. Following are the sites visited:

1. Kolwezi (Musonoie) Copper extracting and processing operations
2. Lumumbashi Official University of the Congo;
Center for Industrial Research in
Central Africa (CRIAC);
social development projects
3. Kipopo National Institute for the Study of
Agronomy in the Congo (INEAC);
fisheries and livestock research centers
4. Bukavu National Institute of Mines
5. Mulungu National Institute for the Study of
Agronomy in the Congo (INEAC)
6. Lwiro Institute for Scientific Research
in Central Africa (IRSAC)
7. Goma/Rwindi/Lake Edouard Albert National Park Fisheries Station

Discussion Papers

In preparation for the Workshop, the ONRD staff and members of the Congolese panel prepared a number of papers (available mainly in French) which served as points of departure for the working group discussions. These papers will be included in the comprehensive Workshop report currently in preparation by the ONRD. Titles of the papers are as follows:

1. Leonard Mukendi, Les Problemes Du Developpement Agricole Du Congo, 12 pages mimeographed, plus appendix (French).
2. Paul Antun, Natural Resources: Mineral Resources of the RDC, 9 pages mimeographed (English) May 17, 1971.
3. Jean-Jacques Symoens, The Development of the Plant Natural Resources of the Congo, 6 pages mimeographed (English) June 1971. Also a 5-page French version.
4. Peter Kunkel, Les Ressources Animales De La Republique Democratique Du Congo, 8 pages mimeographed (French).
5. J. Zakrzewski, Les Ressources Energetiques, 7 pages mimeographed (French).
6. ONRD Section Education, Planification Des Ressources Humaines Du Congo, 22 pages mimeographed (French).
7. Georges Baza, Politique Scientifique et Developpement Economique National, 8 pages plus appendix, mimeographed (French).
8. Leon Phaka, Nutrition et Alimentation en Republique Democratique du Congo, 16 pages mimeographed (French).
9. Jacques Verschuren, Developpement Des Ressources Naturelles: La Conservation De La Nature et Des Ressources Naturelles En Republique Democratique Du Congo - Probleme Des Ressources Animales Des Reserves et Parcs Nationaux, 5 page outline, mimeographed (French).

Workshop Participation

Both opening and closing sessions of the Workshop were public events to which the ONRD invited leading government figures, diplomatic mission chiefs, and international organization representatives. Ambassadors of Japan, Belgium, Israel, and the Soviet Union, and the resident representative

of the World Bank, among others, were present for one or both occasions. The Soviet Ambassador, who showed great interest in the NAS activity, also attended the ONRD reception in honor of the NAS delegation. (In the absence of the U.S. Ambassador, the U.S. Mission was represented by the Charge and the AID Mission Director).

The presence and active involvement in the Workshop discussions of a large number of expatriate (mainly Belgian) participants--sometimes to the exclusion of well-qualified Congolese--provided an incongruous note. The situation reflects the continuing heavy dependence of the Congolese on foreign personnel, especially in science and technology, attributable both to the lack of numbers of their own and lack of self-confidence. A half-dozen Congolese participants gave excellent accounts of themselves with respect both to command of subject matter and leadership in discussions.

Representation of senior scientific and educational establishments was satisfactory. Many of the scientific institutions were represented by their heads; university representation was generally confined to faculty-department heads, senior professors, and lower-ranking Congolese faculty. Officials of Lovanium University in Kinshasa, who were to have played a prominent role in the Workshop, were partly affected by serious student disturbances which broke out just before the Workshop, resulting in the military mobilization of the entire student body and the temporary closing of the University.

Despite the presence of a substantial number of academics, the Workshop found itself somewhat constrained from free and thorough discussion of the educational implications of the Congo's future scientific and technological development. This inhibition resulted from the demarcation of functions and responsibilities existing between the ONRD and the Ministry of Education. The Ministry is responsible for everything

pertaining to education, at all levels. The ONRD is confined to the promotion of certain areas of research, the management of a number of lesser scientific institutions, and rather vaguely defined science and technology planning and coordination functions. As the local convener of the Workshop, but without the co-equal sponsorship of the Ministry of Education, the ONRD felt that the Workshop participants should not delve deeply in matters lying in the province of another government department.

Certain major scientific institutions, such as the Institute for Scientific Research in Central Africa (IRSAC) and the National Institute for Agronomic Studies in the Congo (INEAC), formerly overseen by ONRD and now directly responsive to the Presidency, were well represented at the Workshop. So was the Ministry of Agriculture in the person of its Secretary-General, and the Ministry of Public Health; but the Ministries of Education, Mines, and certain other technical departments were represented by much lower-ranking officials.

In varying degrees, the problem of securing uniformly high Workshop representation from all relevant government departments and other institutions faces the NAS and its counterpart collaborating institutions in many countries where bilateral programs have been established. The problem particular to the Congo appears to derive from the fact that the ONRD is still a young and frail governmental agency. It does not yet have enough influence over other government agencies to easily mobilize their key officials for the type of exercise conducted by the NAS, which, in any event, was wholly novel in the Congolese experience. As the ONRD acquires more visibility and more standing by the quality of its output--through workshops such as the present one, soundly conceived advisory studies, and other activities--it will no doubt be able to attract and involve people from other governmental agencies and institutions with greater ease.

The NAS relationship with the ONRD should be seen as furthering this purpose, and helping endow the Congo with an institution that ultimately could serve it as a major source of initiative and enterprise for the country's scientific and technical development and as a center for analysis and critical deliberation.

Workshop Facilities

The Workshop took place in the main halls of the former Congo Parliament building, an imposing and ample structure, but with facilities not wholly suitable for the requirements of a workshop. Its location in midtown made it too easy for Congolese participants to slip out of meetings to attend to their official affairs, rendering attendance at several of the working groups rather sparse. The drawbacks of the site-- particularly lack of housing and eating facilities in the immediate vicinity-- became evident even to the Congolese in the course of the proceedings. It was agreed that future workshops would be held at a living-and-working facility preferably out of town, such as the N'Sele party Headquarters (NPR), or at the Organization for African Unity (OAU) village, both of which have elaborate resources for housing and international meetings.

Media Coverage

: The presence of the NAS panel in the Congo received substantial coverage by all the media. A cameraman and radio reporter accompanied the group on its tour through the country. A half-hour television documentary of the various visits was aired on the Kinshasa television station during the week of the Workshop discussions. Daily newspaper coverage of the proceedings was given by nearly all Kinshasa papers. Provincial papers also gave attention to the NAS/ONRD visitors in their localities.

Initial Follow-up Activity

In the months since the Workshop the NAS, in accord with the ONRD, has proceeded with initial steps to implement several of its recommendations. Four projects are currently being pursued--in the fields of demography, geology and earth sciences, nutrition, and primatology.

In the fields of demography and geology-earth sciences, it is likely that joint study groups will be at work in the first half of 1972. In the field of nutrition, it is noteworthy that within 3 months of the Workshop the ONRD established a Center for Research in Food and Nutrition under its auspices to pursue the objectives identified in the Workshop.

In the field of primatology, the merits of investigating the possibilities of breeding chimpanzees (in particular, dwarf chimpanzees) in a natural environment were considered in two special meetings called by the NAS. The idea has drawn positive interest from the AID Office of Population, the National Institutes of Health, the National Science Foundation, and several U.S. universities.*

To activate the projects described earlier, the NAS is planning to send a second mission to the Congo in mid-December composed of the

* The interest stems from the exceptional suitability of the chimpanzee as a laboratory model. The numbers of subhuman primates are declining in their natural habitats, yet they are in growing demand by medical and other scientists engaged in clinical testing of birth control agents and other drugs. In the event controlled breeding proves successful, it is proposed to give consideration then to the establishment of a primate research center in the Congo. Such a center could have many of the features characteristic of the newly established Nairobi International Center for Insect Physiology and Ecology (ICIPE). Interest in such a development is fully shared by the Congolese since the center, as presently conceived, would provide a training base for Congolese primatologists and other life-science researchers in a wide range of disciplines, and offer a site for research collaboration with scientists from abroad. Were animals to be produced in substantial numbers, primate breeding colonies might also become of economic value to the Congo. The present worldwide shortage of chimpanzees and the increasing restrictions advanced by international conservationist bodies on their capture and export suggest that, for the long term, establishment of facilities for research in situ might be an appropriate solution.

prospective chairmen of the NAS panels for demography (Ansley J. Coale, Director, Office of Population Research, Princeton University), and of geology and earth sciences (John C. Maxwell, Department of Geological Sciences, University of Texas, and Chairman, NAS-NRC Division of Earth Sciences), and a nutrition specialist member of the NAS Workshop panel (E. Ray Pariser, Senior Research Scientist, Department of Food Science and Technology, Massachusetts Institute of Technology). Coale and Maxwell are to meet with their Congolese counterparts to formulate the precise terms of reference, modus operandi, composition of the respective panels, timing of activity, and completion date for their respective studies. Pariser is to determine how the NAS might continue to assist the Congolese in the implementation of the Workshop recommendations and in the strengthening of their new research center.

With regard to the primate project, it is hoped that a first-phase implementation will be possible by early spring 1972, with the establishment of an experimental breeding colony of dwarf chimpanzees on an island in Lake Tumba, Mabali, in the Equateur Province, at an existing and well-equipped facility to be made available by IRSAC. This effort is to be formalized by the visit of an Academy panel to the Congo for discussions with the heads of ONRD, IRSAC, INEAC, and INCCN. It is anticipated that this joint group would establish itself as an organizing committee for the purpose of mobilizing interest and support, on a multilateral consortium basis, from institutions around the world interested in the promotion of, and collaboration with, a primate research center in the Congo. The establishment of a center would be pursued only upon firm evidence that breeding of dwarf chimpanzees in a controlled native habitat is feasible.

Two additional developments attributable to the Workshop, or the

presence of the NAS panel members in the Congo, deserve mention. As a consequence of a visit after the Workshop to the Kisangani Campus of the University of the Congo by Dr. William E. Rideout, Associate Professor, Office of International Education, the Florida State University, a project of collaboration between these two institutions is emerging. Florida State University is now considering sending a four-or-five-man mission to the Congo from its College of Education to examine curriculum reform with the Kisangani Campus administration.

In the field of agricultural economics--a problem area cited by the Workshop as requiring urgent attention--discussions are in progress between Michigan State University, the Congo Ministry of Agriculture, and the AID Mission for a Michigan State technical assistance project that will seek to give the Ministry the capabilities for economic research, and one of the university institutions the means to train a cadre of Congolese agricultural economists.

In view of this latter initiative, which hopefully will soon materialize into a project, the NAS and ONRD propose to set aside their intended consideration of the agricultural economics question. The rapid development of an action project addressed to a problem highlighted by a workshop fulfills its essential purpose, and obviates the need for further study and discussion by NAS and its collaborating counterpart.

Concluding Note

Considering the level of Congolese indigenous scientific and technical capabilities, the diffusion of institutional and governmental responsibilities and the government's limited experience in dealing with the developmental implications of this sector, the first U.S. - Congo Workshop on science and technology can be said to have fulfilled several important objectives:

1. It brought together the disparate elements of the science and technology establishment and of the government and possibly provided the first occasion in the country's history for a comprehensive forward look at the country's science and technology potentials and requirements.

2. It served to highlight, in the minds of the Congolese participants and of the highest-ranking officials of the Government (to whom the ONRD immediately forwarded the operative Workshop documents), the central problems in science and technology that the Congo must address itself to in the coming years.

3. It helped to define the specific areas for further NAS - ONRD collaboration, which the previous pages have already covered. It is hoped that other projects will follow this initial phase of activity. If the relationship between the two institutions can be sustained for several years, there is reason to hope that it will have significant impact on the Congo's overall development.