

GUYANA

NATIONAL SCIENCE RESEARCH

COUNCIL



**ANNUAL REPORT**

1976

44 PERE STREET,  
KITTY,  
GREATER GEORGETOWN,  
GUYANA.

Comrade Desmond Hoyte,  
Minister of Economic Development,  
Ministry of Economic Development,  
Avenue of the Republic & Brickdam,  
Georgetown.

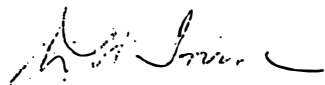
Dear Comrade Minister,

In accordance with Section 15(1) of the  
National Science Research Council Act of Guyana no. 26 of 1974,  
I have the honour to submit the report of the Council's activities  
for the year ending December 31, 1976.

Also submitted, as required by the Act,  
are:

a copy of the Audited Income and Expenditure Account,  
and  
a copy of the Audited Balance Sheet.

Yours cooperatively,



(D.H. Irvine)  
Chairman

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In compliance with Section 15 (1) of the National Science Research Council Act No. 26 of 1974, an Annual Report, together with a statement of its audited accounts, is submitted to the Minister and this is the third such report to be prepared. The first report was submitted in 1974 and covered the period 1972-74. It indicated the general approach towards adopting and innovating policies as well as philosophies which could be relevant to scientific and technological development within Guyana. The second report in 1975 demonstrated the crystallisation of many ideas; it highlighted the main activities of the Specialist Committees and incorporated an ambitious number of projects which were peculiar to Guyana and which could be researched. This report reviews the activities of 1976 and identifies the progress made by the Council

#### MAIN OBJECTIVES DURING PERIOD UNDER REVIEW

1. To establish a functioning Secretariat which could manage and co-ordinate the Council's activities;
2. To germinate and nurture a scientific ethos which still remains a fragile embryo within Guyana;
3. To establish the guidelines of a National Science Policy. The Policy Document is due to be tabled in Cabinet during 1977 and will hopefully specify how Science and Technology can be used for national socio-economic development in the quinquennium 1978-82.

Several events highlighted the Council's activities during the year:-

### The Annual NSRC Lecture

During 1975, the National Science Research Council had decided to introduce an "Annual Lecture" into its programme. Although this activity was of a non-research nature, it was felt that it could be used as a vehicle to convey scientific and technological knowledge in all its forms to the nation in general but to young scientists in particular. The 1976 Lecture was dedicated to the memory of Dr. George Giglioli, M.D., D.Sc., C.C.H., who had worked in Guyana for fifty-two years and was the leader of a dedicated team of workers who had successfully eradicated the scourge of malaria from the coastland

Through the auspices of PAHO/WHO, the National Science Research Council was fortunate to secure the services of Professor L.J. Bruce-Chwatt, Director of the Wellcome Museum of Medical Sciences. A malariologist of international stature and close friend of Giglioli, he was able to place in correct perspective, the latter's contribution towards improving the quality of life for thousands of Guyanese.

Professor Bruce Chwatt, accompanied by Dr. Marco Giglioli, visited several settlements in the interior to assess the malaria situation and the joint report of their visit was instrumental in bringing new impetus to the Malaria Eradication Programme.

### International Seminar on "Hydropower and the Environment, October 4-8, 1976

This Seminar was a collaborate effort with the Upper Mazaruni Development Authority and the Guyana Association of Professional Engineers and was opened by the Prime Minister, Cde. L.F.S. Burnham, O.E., S.C., M.P. The occasion was used to assemble under one roof experts from various countries which had already constructed hydropower facilities and which had had enough time to assess the concomitant social, health and ecological impacts. The Seminar was a complete success in that it achieved all and

even surpassed some of its objectives and Guyana can take some credit as it has been the only country to hold such a Seminar before completion of its first hydropower facility. An even greater awareness of the possible impact of this project in the eco-system was obviously created and a formal request for UN assistance in conducting relevant environmental research has met with favourable response. The proposed site of the hydropower facility is in the West Central Region of Guyana between 59° and 61° West Longitude and 5° and 6° North Latitude. The dam should empolder approximately one thousand and fifty square miles of water and should produce one thousand megawatts of energy on

The principal features of the Project are:-

- (i) a high dam;
- (ii) a power station;
- (iii) two water conveyance tunnels, one approximately six miles long and the other approximately one and a half miles long;
- (iv) a power transmission corridor approximately two hundred and fifty miles long;
- (v) an access road to cover the same distance;
- (vi) a new town to house families of operation, maintenance and research personnel, together with schools, a health centre and recreational facilities.

The following agencies also gave enthusiastic support:- Commonwealth Fund for Technical Cooperation (CFTC), Canadian International Development Agency (CIDA), United Nations Environment Programme (UNEP), United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the United States Agency for International Development (USAID).

The proceedings of the Seminar are being edited for publication during 1977.

### Chairmanship of Commonwealth Science Council

Also worthy of note is that within four years of Guyana becoming a member of the Commonwealth Science Council (CSC), the country was elected Chairman of the Council at its Ninth Meeting in Sri Lanka, November 29 - December 10, 1976. This is another indication of the high esteem achieved amongst Commonwealth science organisations due to the dynamic programme which is being implemented by NSRC.

### Request to Host UN Sub-Regional Meeting on Science & Technology

In November, one of UNESCO's Science Advisers visited the Secretariat for discussions as to whether Guyana was prepared to host the sub-regional conference which would be preparatory to the main UN Conference on "Science and Technology for Development", scheduled for 1979. The suggestion was adopted by Council subject to Cabinet's approval.

### Formation of Economic & Social Specialist Committee

From its inception, Council had recognised that no scientific or technological activity could be implemented in isolation from other national activities, but the pressure on the part-time Secretariat had delayed positive concretisation of the idea. However, at the June meeting of Council, the proposal was adopted that another Specialist Committee be created. The Committee was to be chaired by a behavioural scientist, and its main functions were to evaluate economic and social impacts of research as well as to suggest ways by which beneficial changes in behavioural patterns could be inaugurated.

### National Science Research Council Building

During October, the contract for the building to house the Secretariat and laboratories of the Institute of Applied Science and Technology was signed and construction started on October 26. Due to favourable weather conditions, the work on the building was four weeks ahead of schedule by December 31.

## Co-ordination of Science & Technology

Science and Technology are becoming increasingly important for economic and social development. It is therefore axiomatic that the co-ordination of scientific and technological activities would necessitate the establishment of strong linkages between the Council and the national as well as international scientific communities.

During the year, Council joined the World Association of Industrial and Technical Research Organisation (WAITRO) and also established closer relations with the United Nations Environment Programme (UNEP); the United Nations Educational, Scientific and Cultural Organisation (UNESCO); the Commonwealth Science Council (CSC); Organisation of American States (OAS). Contacts were also established with scientific bodies in Africa, Canada, the Caribbean, Sri Lanka, the United Kingdom and the United States.

Of note, was Guyana's participation with observer status in three meetings sponsored by the Organisation of American States (OAS) held in Trinidad and Jamaica. As a consequence of these meetings, a Guyanese scientist was assigned responsibilities for conducting a regional energy study under the auspices of OAS. His paper is to be presented at the next regional meeting of the OAS.

Of importance also were the visitors, persons with an interest in the development of a national scientific capability. The list is indicative of Council's policy to establish and maintain contact with the external scientific community. On occasions, distinguished visitors consented to share their knowledge with appropriate audiences at lectures organised at the Council's request.

Local activities to stimulate public awareness as to the contribution of science to progress were concentrated on:-

i)

During the latter half of the year, two very important workshops were held. In August, Dr. R.J. Whitehead, a UNESCO Consultant on Science



Policy, visited Guyana to assist the scientific community in drafting an outline for a National Science and Technology Policy. A further meeting of scientists, technologists and administrators was held in November to examine the draft in detail. The revised document has since been submitted to the Council for consideration, and it is hoped that it will be tabled for approval by Cabinet during 1977.

11) Hydropower Quiz Competition:

In an attempt to stimulate the interest of youths in the development of hydro-electric technology in Guyana, Council sponsored a competition for listening schools on the Broadcast to Schools programme of the Ministry of Education and Social Development. Questions were related to the construction of a hydropower dam in the Upper Mazaruni. The Quizmaster was the Secretary-General of the Council, and book prizes of \$10.00 each were awarded to five students out of a field of one hundred and fifty entries from seventy schools.

The response to the Quiz from the schools, as well as from the general public, has encouraged the Secretariat to institute a current affairs science quiz as an annual feature of the NSRC programme.

The year therefore ended with an orchestrated climax of growth and positive achievement which augurs well for the effective role the Council can play in the development process.

Because Science, Technology, Politics, Education, Economics and Culture are so inextricably intertwined, the NSRC has had to rely on the support and selfless contributions of various individuals and organisations in implementing its numerous programmes.

On behalf of the Secretariat and Council, I therefore take this opportunity to place on record our sincere gratitude and appreciation to all who contributed to our success during the past year.

P.A. Munroe  
Secretary General

THE ORGANISATION

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The National Science Research Council was established as a corporate body by Act No. 26 of 1974 with the following responsibilities:-

- (a) to assist in the formulation of, and to advise the Government on, a National Science Policy;
- (b) to determine priorities for scientific and technological activities in Guyana;
- (c) to promote research and to ensure the application of the results of scientific and technological activities to the development of agriculture, industry and social welfare in Guyana;
- (d) to advise the Government on the application of science and scientific research to problems of national importance;
- (e) to advise the Government on priorities in the national research programme;
- (f) to advise on the allocation of funds for scientific research and on the recruitment and use of research staff;
- (g) to advise upon, and encourage the training of research personnel by the provision of scholarships, fellowships, bursaries and other forms of assistance;

- (h) to advise on the action to be taken to maintain an adequate supply of scientific and technical personnel having regard to the need of Guyana from time to time for such personnel;
- (i) to advise on suitable arrangements for planning, managing and co-ordinating scientific activities at various levels, including the establishment of Research Institutes;
- (j) to review generally and advise on the programmes and budgets of Research Institutes;
- (k) to collect and disseminate information relating to scientific and technical matters, and to publish reports and papers and hold conferences on scientific and technical matters;
- (l) to do such other things as may be necessary for the advancement of scientific and technological research in Guyana for the purpose of national development.

## MEMBERSHIP OF NSRC

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The Act provides for a membership of not more than thirty persons who are qualified and experienced in matters relating to science, technology, industry, finance or administration and who are appointed by the Minister of Economic Development under whose portfolio the Council is placed.

## MEMBERS--

Cde. D.H. Irvine, C.C.H.	...	Chairman
Cde. P.A. Munroe	...	Secretary-General
<u>Representing Ministries:</u>		
Cde. E. Burrowes	...	Deputy Chief Education Officer Ministry of Education
Cde. H.A.D. Chesney	...	Chief Agricultural Officer Ministry of Agriculture
Cde. L.G. Charles	...	Chief Hydraulics Officer Ministry of Agriculture
Cde. A.V. Downer	...	Principal Agricultural Officer Ministry of Agriculture
m Cde. P.A.D. Allsopp	...	Technical Specialist Ministry of Economic Development
Cde. P. Chase	...	Chief Statistician Ministry of Economic Development
Cde. E. Hopkinson	...	Commissioner of Geological Surveys Ministry of Energy and Natural Resources
Cde. C.A. John	...	Conservator of Forests Ministry of Energy and Natural Resources

Representing Sciences:

Cde. R.L. Baird	...	Chief Medical Officer Ministry of Health
Cde. K.E.D. Potter	...	Chief Works Officer Ministry of Works and Housing
Cde. V. Bentt	...	Senior Lecturer Faculty of Education University of Guyana
Cde. I. Jainarain	...	Senior Lecturer Department of Economics University of Guyana
Cde. L. Kunar	...	Lecturer Department of Physics University of Guyana
Cde. Omawale	...	Senior Lecturer Department of Biology University of Guyana
Cde. L.E. Ramsahoye	...	Lecturer Department of Physics University of Guyana
Cde. G. Walcott	...	Lecturer Department of Chemistry University of Guyana
Cde. E. Chin	...	Factory Manager/Director Guyana Pharmaceutical Corporation
Cde. R.A. Wilkins	...	Director Guyana Sugar Corporation
Cde. T. Fletcher	...	Representative Guyana Association of Professional Engineers

Representing UG:

Cde. L.P. Cummings	...	Dean Faculty of Social Sciences, UG
Cde. J.J. Niles, A.A.	...	Dean Faculty of Natural Sciences, UG

Representing GUYBAU:

- Cde. C. Saul ... Deputy Chief Executive Officer  
Guyana Bauxite Company
- Cde. E. Humphrey ... Geologist  
Guyana Bauxite Company

Representing Commerce & Industry:

- Cde. George Jaikaran ... Managing Director  
Jaikaran's Drug Store Limited
- Cde. L.G. Singh ... General Manager  
Torginol (Guyana) Limited
- Cde. J. Radzik-Sochacki ... Chief Chemist  
Guyana Liquor Corporation
- Cde. Frank Noel, A.A. ... Secretary  
Guyana State Corporation

Representing Consumers:

- Cde. E. Cox, M.S. ... Member and a Member  
Guyana Consumers' Association

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## COMMITTEES

Several Specialist Committees have been established to advise the Council in the exercise of any of its functions under the Act. Main areas of concern are based on the present national priorities of feeding, clothing and housing Guyana's population. The Specialist Committees are listed below.

1. Agricultural Research Committee
2. Bureau of Standards Committee
3. Economic and Social Research Committee
4. Forestry Research Committee
5. Local Advisory Committee of the International Centre for Research on Manatees
6. Medical Research Committee
7. Science and Industry Committee

The role of these Committees is to liaise with the relevant governmental and private agencies in the formulation and execution of a National Science Policy. Their activities also include the formulation and promotion of the Council's own scientific research programme as well as the co-ordination of research activities at the national level. Further, they ensure the proper discharge of the day-to-day functions of the Council, subject to ratification by the general meeting of the Council.

Administrative and technical support for the above activities is provided by a Central Secretariat which is staffed by a Secretary-General and a team of administrative and technical personnel. The Chairman, the Secretary-General, the Executive Officer, and the appropriate Scientific Officer, are ex-officio members of Specialist Committees.

Recommendations from these Committees are forwarded to the Executive Committee, which is an Administrative Committee comprising mainly of Chairmen of the Specialist Committees, for consideration. All decisions of the Executive Committee are subject to ratification by the General Council. The composition of this Committee during 1976 was as follows:-

Chairman	Cde. D.H. Irvine Vice-Chancellor, University of Guyana
Members:	Cde. R.L. Baird Chief Medical Officer, Ministry of Health
	Cde. F.L. Collins Executive Officer, N.S.R.C.
	Cde. E. Cox Chairman, Bureau of Standards Committee
	Cde. L.P. Cummings Chairman, Forestry Research Committee
	Cde. A.V. Downer Chairman, Agricultural Research Committee
	Cde. P.A. Munroe Secretary-General, N.S.R.C.
	Cde. Omawale Chairman, Medical Research Committee
	Cde. L.E. Ramsahoye Chairman, Science and Industry Research Committee
	Cde. C. Saul Deputy Chief Executive Officer, GUYBAU
	Cde. L.G. Singh General Manager, Torginol (Guyana) Limited



## S T A F F I N G

During the year, the staff was strengthened by the appointment of one Senior Scientific Officer, three Scientific Officers, one Research Assistant, and one Administrative Assistant, all of whom remained to the end of the year. At the clerical level, however, Council experienced continued turnover, but the total number at the end of the year was seven.

Discussion on Conditions of Service governing the staff was initiated towards the end of the year. In the meantime, however, Council approved a group insurance scheme.

Recruitment and training of staff of high calibre for the Council's research programme is a matter of paramount concern. Discussion was therefore initiated with the Natural Sciences Faculty of the University of Guyana and early in the year, a group of prospective science graduates visited the Secretariat where the Secretary-General addressed them on future career prospects with the National Science Research Council. During the course of the year, two of these students were appointed to the Council's staff whilst two more successfully applied for further training to enable them to take up appointments with the National Science Research Council.

Finally, under the auspices of the Overseas Development Ministry, Council secured the services of a Technical Specialist (Documentation) for a period of one year with effect from April 1, 1976.

Secretary-General	...	Cde. P.A. Munroe
Executive Officer	...	Cde. F.L. Collins
Administrative Assistant	...	Cde. Sylvia Leacock
Senior Scientific Officer	...	Cde. B.A. Gibbs
Scientific Officers	....	Cde. J.R.O. Henry
		Cde. N. Onuoha-Moses
		Cde. R. Persaud
	...	Cde. C.D. Knee
	...	Cde. S.E. Plummer
Accounts Clerks	....	Cde. I. Azeez
	...	Cde. Kiran Singh
Secretary/Typists	...	Cde. D. Hall
		Cde. D. Roberts
		Cde. M. Fox
		Cde. E. Madray
Clerk/Typists	....	*Cde. J. Ramdhany
	....	*Cde. J. Latchman
	....	Cde. K. Shahid
		Cde. C. Benjamin-Critchlow
Telephonist/Receptionist	...	Cde. J. Hall
Office Assistant	...	Cde. C. Nutridge
	...	Cde. E. Douglas
		Cde. C. Warde
Drivers	...	Cde. A. Haywood
		Cde. S. Giddings

\*Resigned

Among the persons who visited the Council during the year were:-

Wan-I-Ch'en	Medical Officer, PAHO/WHO
Marco Giglioli	Director, Mosquito Research and Control Unit, Cayman Islands.
Lawrence J. Bruce-Chwatt	Director, Wellcome Museum of Medical Science, London.
G.C.L. Bertram	Royal Society Visiting Professor, London.
D.A. McMaster	First Secretary, Canadian High Commission.
A.R. Taylor	Public Works, Canada.
David Wells	Canadian High Commission
A. DeSilva	UNESCO Representative for Guyana
Duncan Scott	Ministry of Agriculture & Fisheries
Trevor Louis Boothe	Caribbean Environment Programme, Mexico.
George Young	UNESCO, Paris
E. Tikasingh	CAREC, Trinidad.
H. Steffen Peiser	N.B.S., Washington, USA.
Rennie J. Whitehead	Canada
John Whittington	Canada
E.L. Quartey	Volta River Authority, Ghana.
Dale W. Jenkins	Pan American Health Organisation, Mexico
John Berry	North of Scotland Hydro-electric Board, Scotland.
C. Eddy Darwin	Kerala State Electricity Board, India.
P.R. Niekoop	Bureau for Hydropower, Surinam.
J.P. Schultz	Forest Service, Surinam
Peter L. Ames	Harza Engineering Company, Chicago, USA.
E.A.K. Kalitsi	Volta River Authority, Ghana.

Dario Gomes	Centrais Electricas De Northe Do, Brazil.
Francisco Szekely	UNEP, Mexico.
Walter Castagnino	CEPIS/PAHO, Peru.
Abel Mkandawire	Zambia Electricity Supply Corporation
Robert Goodland	The Cary Arboretum of New York, USA.
Patrick DeRham	Swiss Technical Co-operation, Switzerland.
Roy G. Miti	Kariba North Bank Company, Zambia.
Franklin McDonald	Ministry of Mining and Natural Resources, Jamaica.
Desmond D. Anthony	Nipissing University College, Canada.
Paul R. Crowley	U.S. Development Agency, USA.
Phillip Mitrani	UNESCO, France.
Alain Fournier	University of East Anglia School of Development Studies, England.
S. Sultanov	U.S.S.R.
Claudia Johnson	National Planning Agency, Jamaica,
P.P. Khanthan	Commonwealth Secretariat, London.
Professor Nemeč	Switzerland
C.E. Benst	Trinidad
F.E. Dorow	Academy of Science, USSR.
Azeem A. Shariff	U.S.A.
Grigoriev	USDA, USSR
Fedorow	USSR Academy of Science

## BUILDING PROGRAMME

In November, construction of a building to house the NSRC Secretariat and to provide laboratories for the Institute of Applied Science and Technology, was commenced. This Institute will endeavour to:-

- establish and maintain contact with research organisations, industrial firms and consultants;
- develop novel and profitable uses for indigenous raw materials;
- adapt processes and procedures developed elsewhere to the needs and resources of Guyana;
- develop ad hoc solutions to the specific scientific and technological problems of interest to local industry;
- join in and initiate industrial planning and possibility studies.

## OVERSEAS MEETING

i) Cde. P.A. Munroe, Secretary-General, NSRC and Cde. H.G. Simon, Member of the Forestry Research Committee, attended a meeting of Science and Technology Policy Planning in Jamaica in April 1976.

ii) Cde. F. Collins, Executive Officer, attended a Seminar on 'Programmes and Policies for Science and Technology in Developing Nations (PPSTDN)' at Cornell University, New York, July - August 1976. After the Seminar, he proceeded under the auspices of the Canadian International Development Agency (CIDA) on a two-month attachment with the Canadian Science Council in Ottawa. During an observation tour of the Ontario Research Foundation, Cde. Collins, accompanied by Cde. J. Samaroo, President of the Guyana Manufacturers' Association, held discussions with the President of the Foundation about the possibility of ORF giving assistance to the Council in the training of engineers for a proposed technology transfer unit in Guyana. A comprehensive proposal on this issue was under consideration by Council at the end of the year.

iii) Cde. B.A. Gibbs, Senior Scientific Officer, attended a Seminar on 'Non-Conventional Energy Sources' which was sponsored by the Organisation of American States and held in Trinidad during October-November 1976.

iv) The Chairman of NSRC, Cde. D.H. Irvine, and the Secretary-General, Cde. P.A. Munroe, attended the Ninth Meeting of the Commonwealth Science Council in Sri Lanka from November 29 - December 10, 1976. This meeting unanimously elected Cde. Munroe as Chairman of the CSC for a period of two years.

v) Cde. A.V. Downer, Chairman of the Agricultural Research Committee, attended the 2nd Caribbean Seminar on Scientific and Technological Planning in Trinidad on January 11-17, 1976.

vi) Cde. R.M. Gordon attended a Meeting of the Institute of Food Technologists in California in June, 1976.

vii) Cde. R. Woo-Ming attended a Workshop on Standardisation and Measurement Services in Industrialising Economies in the United States of America from October 16-30, 1976.

viii) Guyana was represented by Cde. F. Mongul at the Mammals of the Sea Conference which was held in Bergen, Norway, in September 1976.

ix) Cde. Omawale, Chairman of the Medical Research Committee, and Cde. Rodrigues attended the 21st Meeting of the Commonwealth Caribbean Medical Research Council (CCMRC) from April 21-24.

Reports of all meetings have been prepared and are available at the Secretariat.

CONGRATULATIONS

The National Science Research Council extends sincere congratulations to Cdes. B.A. Crawford, J.J. Niles and F. Noel, all of whom have been decorated with the Arrow of Achievement.

CONDOLENCE

Council records with sorrow the death in October of Denise Saul, daughter of Cde. Claude Saul, Member of General Council.

WELCOME - New Council Members.

The National Science Research Council extends a hearty welcome to all new members and looks forward to benefitting from the experience of these members.



## REPORT OF THE

AGRICULTURAL RESEARCH COMMITTEE

## Chairman

Cde. A.V. Downer  
Principal Agricultural Officer  
Ministry of Agriculture

## Members

...

Cde. E. Berkley  
Agricultural Economist  
Ministry of Agriculture

Cde. L.G. Charles  
Chief Hydraulics Officer  
Ministry of Agriculture

Cde. H.A.D. Chesney  
Chief Agricultural Officer  
Ministry of Agriculture

Cde. L. Cort  
Specialist Consultant  
Ministry of Economic Development

Cde. P. Fernandes  
Principal Agricultural Officer  
Veterinary and Livestock Science  
Ministry of Agriculture

Cde. R. Fletcher  
Principal Agricultural Officer  
Central Agricultural Station  
Ministry of Agriculture

Cde. R. Gordon  
Senior Food Scientist  
Agro Industrial Unit, G.A.P.C.

Cde. H. Madramootoo  
Guyana Rice Corporation

Cde. J. McCalmon  
Senior Fisheries Officer  
Ministry of Agriculture

Cde. P. McKenzie  
Principal Veterinary Officer  
Ministry of Agriculture

Cde. W.J. Phillips  
 Planning Co-ordinator  
 Guyana National Service

Cde. L.G. Singh  
 General Manager  
 Torginol (Guyana) Limited

Cde. R.E. Stewart  
 Deputy General Manager  
 Guyana Marketing Corporation

Cde. R.S. Surujbally  
 Animal Health and Research Director  
 Livestock Development Company

Cde. R.A. Wilkins  
 Director  
 Guyana Sugar Corporation

## ACTIVITIES

The activities of the Committee were hampered somewhat by operational constraints deriving from the diversity of existing agencies in Agriculture. To minimise the impact of these constraints and to establish a functional base for the co-ordination of research in agriculture, the compilation of an inventory of existing facilities and equipment for research in agriculture was commenced. This is still to be completed and would hopefully permit an improved awareness of the nature and scope of research projects which can be promoted by the Committee. The establishment of a Data Storage and Retrieval System proceeded during the year and its functional capabilities now provide a useful service for obtaining background information. This inventory and the Data System would constitute a meaningful start to the development of a loose Institute for Research in Agriculture and related fields.

Early in the year, the Committee attempted to monitor progress in the Cassava Projects which had been undertaken by the Ministry of Agriculture, the Project Evaluation Unit of Guyana Stores, and the Guyana Agricultural Products Corporation.

Towards the end of the year, however, consideration was given to ways and means of unifying the approach to studies on cassava and the Committee will be strongly represented on a joint Committee to be established for the designing and implementation of a project aimed at the adaptation of available technology in cassava production and utilization in Guyana.

The Committee was involved in discussions with Dr. Parker of Texas A and M University in regard to the feasibility of Shrimp Culture at suitable sites on the Guyana Coast. This seems to be an area of promise and will be looked at more closely in 1977.

#### SEMINARS/CONFERENCES

The Committee was represented at each of the Workshops held during the year to formulate a National Science Policy. There was representation also at the Hydropower Seminar held in October. Attendance at overseas Seminars included:-

The 2nd Caribbean Seminar on Scientific and Technological Planning held in Trinidad on January 11-17, 1976.  
(Cde. A.V. Downer)

The 36th Annual Meeting of the Institute of Food Technologists held in California in June.  
(Cde. R.M. Gordon)

#### RESEARCH PROJECTS

Several research proposals were submitted to the Committee during the year, but consideration of these and of proposals made from 1974 onwards pointed to the constraints of the availability of workers and the possibility of duplication. The need for a streamlined approach to project implementation was recognised and Committee has since identified four projects for attention during 1977.

The growth and potential of Agricultural  
Co-operatives in Guyana;

Marketing of Agricultural produce as  
affected by handling, storage, etc.;

Processing of enriched plantain flour;

Dry storage to increase the life of yams,  
cassava, eddoes, etc.

### TRAINING

The Committee accepted Cde. R.M. Gordon to be its representative on the interviewing panel for selection of potential trainees.

### PUBLICATIONS

The Committee had no publications during 1976.

## REPORT OF THE

BUREAU OF STANDARDS COMMITTEE

Chairman     Cde. E. Cox  
Member, Guyana Consumers' Association

Members     Cde. B.C. Berry  
Director/General Manager  
Berger Paints

Cde. H. Brijbassi  
Senior Economist  
Ministry of Trade & Consumer Protection

Cde. P. Chase  
Chief Statistician  
Ministry of Economic Development

Cde. L. Chin  
Factory Manager  
Guyana Pharmaceutical Corporation

Cde. D. Field-Ridley  
Senior Economist  
Ministry of Trade & Consumer Protection

Cde. E. Humphrey  
Manager  
Bauxite Process & New Products  
Guyana Bauxite Company

Cde. W.O. Orderson  
Cleansing Consultant/Workshop Manager  
Cleansing Department, M.C.C.

Cde. C.E. Outridge  
Executive Secretary  
Consultative Association of Guyanese Industry

Cde. M. Pollard  
Principal  
Carnegie School of Home Economics

Cde. A.M.B. Sankies  
President  
Guyana Association of Professional Engineers

Cde. D. Sharma  
Surgeon  
Public Hospital - Georgetown

Cde. A. Smith  
Chemical Engineer  
Small Industries Corporation

Cde. R. Westmaas  
Dean  
Faculty of Technology, University of Guyana

Cde. R. Woo-Ming  
Government Analyst  
Government Analyst Department  
Ministry of Health

Early in the year, the Committee was galvanised into action with the expectation that a candidate having been identified for the post of Director of the Bureau of Standards, the position would be filled early. Two committees were set up under the Chairmanship of Cde. (Dr.) Leslie Chin, the first to define the functions and key objectives of the Bureau of Standards Committee and fix targets for 1976; the second to:

- i) examine and make recommendations on the training needs of the proposed Bureau;
- ii) to work out the terms of reference of an expert on quality control whose services should be
- iii) to work out the terms of reference for two experts from the National Bureau of Standards (United States) who were expected to visit Guyana in June, 1976.

One area that proved considerably difficult was that of making concrete recommendations for effective operation of a Bureau with existing constraints due to:

- i) the lack of adequate financial resources to set up immediately new laboratories for testing; and

- ii) the shortage of skilled manpower to carry out such testing.

There was also the necessity to work out the right approach to setting and maintaining standards for processed foods which now approximately fall under the Minister of Health, but which should also be one of the top priorities of a Bureau.

### VISITS OF EXPERTS

The Committee has been seeking advice from persons with expertise in standards setting. Dr. J.A. Campbell, a former Deputy Director of the Food and Drug Directorate in Canada, who had visited in April 1975, and in September 1975, was to have made a third visit in March 1976, but due to pressure of work at the Caribbean Food and Nutrition Institute, to which he was then attached, this did not materialise. However, his recommendations for the Development and Enforcement of Standards in Guyana have been studied along with other reports.

Dr. B.N. Singh, United Nations Expert on Quality Control and Inspection, and a Director of the Department of Statistics, Indian Standards Institution, who assisted with a Seminar on Quality Control in September 1975, returned in August 1976 to make an examination of processes in some factories and industries and testing facilities. He stayed from August 15.- 22, and in his second report pointed to "the great scope and urgent need for proper introduction of quality control in the industries so as to improve the quality, increase the productivity, reduce the cost and enhance the efficiency, which will be in the interest of both the producers and the consumers and also of the country". His view is that the Bureau of Standards' main work would be in the fields of standardisation, quality control, certification marking and industrial research and testing.

In July, a survey was conducted by a team of three experts as part of the programme under the National Bureau of Standards of the

United States Agency for International Development. Leader of the team was Mr. H. Steffen Peiser, Chief, Office of International Relations, N.B.S. Other members were Mr. Niels C. Beck and Dr. Kenneth S. Stephens. They held discussions with various groups representing industry and commerce and their final report is now awaited.

In answer to an appeal from the Fisheries Division of the Ministry of Agriculture, the U.N.D.P./F.A.O. provided a quality control consultant, Mr. Richard Garm, to advise on quality control of fishery products and processing establishments. Mr. Garm visited from November 12-25.

#### QUALITY CONTROL WORKSHOP

With a growing public demand for improvement in the quality of food locally produced, the Committee with the assistance of the Government Analyst (Ministry of Health), and the Food Technology Division of the Guyana Agricultural Products Corporation, organised a workshop on the Method of Manufacture of Tomato Ketchup on June 16. Owing to technical difficulties, the venue had to be changed at short notice and, with the kind permission of Cde. Fred Peterkin, Director/General Manager, it was held at Guyana Food Processors Limited. Thirty persons took part in the Workshop.

#### METRICATION

Although it does not fall within the ambit of the Committee, it was nevertheless felt desirable that this Committee should prod into renewed activity those responsible for introducing metrication. The Ministry of Trade and Consumer Protection has now recommended to the National Science Research Council, and the latter has accepted, that the Metrication Board should fall under the aegis of NSRC.



CARICOM COMMON MARKET STANDARDS COUNCIL

The inauguration of the CARICOM Common Market Standards Council took place in Georgetown on May 20-21. Cde. Rex Woo-Ming has been elected to the Executive Committee and has been named as Co-ordinator of a Technical Sub-Committee on Drugs and Cosmetics.

The establishment of this Standards Council with the objectives of harmonising regional standards for goods entering into regional trade reinforces the need for early functioning of a Guyana National Bureau of Standards.

On returning from the N.B.S. Workshop, Cde. Woo-Ming took the opportunity to discuss the harmonisation of drugs and cosmetics legislation with the authorities in Jamaica and Trinidad and Tobago. As a result, he has drafted a model Drug and Cosmetics legislation for the CARICOM region and has submitted this to the Executive Committee for circulation and comments from the members of the CARICOM Standards Council.

MEETINGS AND MEMBERSHIP

The Committee held ten meetings during the year under review. In keeping with a recommendation in a report previously made to NSRC, the membership has now been extended to include representatives from the following:

- Guyana Association of Professional Engineers;
- Small Industries Corporation;
- Guyana Trades Union Congress; and
- Guyana Bauxite Company Ltd.

On September 1, Cde. Desiree Field-Ridley, the representative of the Ministry of Trade and Consumer Protection, who had served on the Committee since its inception, resigned. Her place was taken by Cde. Harold Brijbassi, Senior Economist in the Ministry.

The name was changed from Bureau of Standards Council to Bureau of Standards Committee from August 16, 1976.

### OVERSEAS VISITS

Cde. Woo-Ming was selected to attend a Workshop from October 16-30 on Standardisation and Measurement Services in Industrialising Economies, arranged by National Bureau of Standards, United States. This Workshop was limited to fifteen persons who had major responsibilities in standardisation and measurement services and who were no more than one level removed from policy-making.

Arising out of contacts made by Cde. Woo-Ming at the Workshop, Guyana can obtain, through the kind courtesy of N.B.S., the 48-volumes annual book of ASTM Standards, which currently contains more than 6,000 standards, on payment of US\$25.

Secondly, a complete set of American National Standards Institute (ANSI) standards valued at US\$6,000 has been offered by Mr. Steffen Peiser, Chief, Office of International Relations, Bureau of Standards, through A.I.D.

It is also understood that sympathetic consideration will be given to a request for a set of Standard Weights and Measures and related equipment for a Metrology Lab. (valued at US\$100,000) if the request is channelled through USAID. Alternatively, it may be possible to obtain a complete set of only Standard Weights and Measures as a gift from the Government of India, if a request was made through the Indian High Commission.

### CONTACTS

During the year, the Committee continued to receive draft specifications from CARICOM territories, but without a functioning Bureau, it was not possible in most cases to make comments.

A questionnaire submitted by the Commonwealth Science Council through the Chairman of NSRC was completed and returned.

### STAFFING

An organisational Plan (10 year projection) for the proposed Guyana National Bureau of Standards - the name selected by the Committee - has been drawn up. Estimates for the first year of operation have been prepared and an inventory of testing facilities has been completed.

One Scientific Officer has been assigned on a part-time basis by the Secretariat to work with the Committee. When the post of Director is filled, it is hoped to increase the staff gradually as work develops.

The Committee would like to record its deep appreciation to all those who assisted in making 1976 a year of action and looks forward to continued co-operation with all the Ministries, State Corporations and private enterprises concerned with the setting up and monitoring of standards.

## REPORT OF THE

ECONOMIC AND SOCIAL RESEARCH COMMITTEE

- Chairman ... Cde. V. Bentt  
Senior Lecturer  
Faculty of Education, U.G.
- Members : ... Cde. D. Augustin  
Chief Planning Officer  
Ministry of Economic Development
- Cde. E. Beresford  
Industrial Relations Officer  
Guyana Bauxite Company Ltd.
- Cde. E. Burrowes  
Deputy Chief Education Officer  
Ministry of Education
- Cde. B. Crawford  
General Manager  
Upper Mazaruni Development Authority
- Cde. N. Mitchell  
Architect  
Norris Mitchell Associates
- Cde. T. Payne  
Archivist  
National Archives
- Lecturer  
Department of Sociology, U.G.
- Cde. I.A. Telfer  
Principal Agricultural Officer  
Ministry of Agriculture
- Cde. J. Tyndall  
Deputy Secretary-General  
CARICOM
- Cde. D.I. Yankana  
Executive Chairman, Public Utilities & Services  
Guyana State Corporation

The Economic and Social Research Committee was established by a decision of the General Council with the aim of reviewing the social implications of major development projects, and determining priorities for social and economic research by the National Science Research Council.

### ACTIVITIES

The inaugural meeting was held on August 25, 1976. At this meeting, the Committee gave special attention to the formulation of its terms and reference. At a subsequent session, the following were agreed as the terms of reference of the Committee.

1. The Committee is advisory in function, giving recommendations to the General Council with special reference to economic and social aspects of Science Policy;
2. The Committee should give advice on and monitor research programmes which are supported by NSRC funds;
3. In relation to (1.) and (2.) above, the Committee should take steps to inform itself of all on-going relevant research activities;
4. Applications for funding of research projects should be made to the Committee through the NSRC Secretariat.

The Committee recognised the need for technical support from the Secretariat and recommended initially the appointment of a Scientific Officer to the Committee.

REPORT OF THE

FORESTRY RESEARCH COMMITTEE

Cde. L.P. Cummings  
Deputy Vice-Chancellor, U.G.

Cde. C. David  
Assistant Conservator of Forests  
Forest Department

Cde. L. Harry  
Utilisation Officer  
Forest Department

Cde. A. Miller  
Marketing Manager  
Guyana Timber Export Board

Cde. D. Persram  
Deputy Conservator of Forests  
Forest Department

Cde. W.J. Phillips  
Planning Co-ordinator  
Guyana National Service

Cde. O. Sampson  
Senior Field Assistant  
Forest Department

Cde. H.G. Simon  
Forest Economist  
Forest Department

Cde. V. Veira  
Adviser  
Ministry of Energy & Natural Resources

Cde. M. Waldron  
Forest Department

Cde. I. Welch

Cde. P. Willems  
Financial Director  
Willems Timber & Trading Co. Ltd.

## ACTIVITIES

Because of other national commitments, the severe constraints were placed on the Chairman's time and the Committee's activities were somewhat restricted. As a result, only three meetings were held during the year. Discussion centered on specific courses of action which the Committee should take. The publication of the bibliography of forestry in Guyana which had been delayed was seen as the Committee's main guide to action in carrying out surveys of research activities. The Committee also felt that in addition to research needs, attention should be given to the application of known research results, e.g. the application of wood preservation techniques which were successfully demonstrated in the 1960's by the United Nations Forest Industries Development Survey (UNFIDS) programme.

In the meantime, however, the Committee recognised the potential of forestry as an alternative source of energy and decided to take a closer look at the wood-gas project which was an attempt to rehabilitate an old plant at Mahdia in the hinterland for the production of wood-gas for the generation of electricity for the local community. The Committee succeeded in establishing dialogue with the project towards the end of the year.

The Committee also examined a proposal for research on Charcoal involving:-

- the economies and methods of production;
- possible markets for charcoal and secondarily its by-products;
- laboratory and development work aimed at producing various quality charcoals for special users, e.g., bauxite calcining.

Satisfactory progress was made in obtaining funds from NSRC and other sources.

The Committee is concerned with the impact of development on the environment and in this connection made a recommendation that one of its members should attend the HABITAT-UN Conference on Human Settlements, which was held in Vancouver, Canada in July 1976.

Generally, the year under review, although not appearing to be an active one for the Committee, has been one in which solid preparatory foundation was laid for meaningful research to be undertaken in economically significant areas of the economy fuel. The publication of the Forestry Bibliography would greatly assist in establishing further an expanded research programme.



## REPORT OF THE

LOCAL ADVISORY COMMITTEE OF THE  
INTERNATIONAL CENTRE FOR RESEARCH ON MANATEES

Chairman     ...   Cde. D.H. Irvine  
                   Vice-Chancellor  
                   University of Guyana

Members     ...   Cde. J.F. Bates  
                   Senior Agricultural Officer  
                   Ministry of Agriculture

                  Cde. L.G. Charles  
                   Chief Hydraulics Officer  
                   Ministry of Agriculture

                  Cde. E. Croal  
                   Agronomist  
                   Ministry of Agriculture

                  Cde. P. Fernandes  
                   Executive Chairman  
                   Livestock Development Company

                  Cde. Mona Irvine

                  Cde. F. Mongul (National Co-ordinator)  
                   Principal Veterinary Officer  
                   Ministry of Health

                  Cde. N.E. Robertson

                  Cde. J.R. Strathearn  
                   Director  
                   Guyana Sugar Corporation

The energies of the Committee were directed mainly towards the acquisition of manatees although some experimental work was started using existing stocks.

The collection drive was intensified by the acquisition of an engine to be used in exploring the upper reaches of the rivers and creeks. The main snag in this programme was the heavy rains during the early months which made it impossible for explorations to proceed, with any reasonable prospect of success. However, with improved weather conditions, two manatees were caught, but one died in transit.

During the year, the Committee received a visit from Dr. G.C.L. Bertram, Chairman, Sirenia Specialist Group of the IUCN Service Commission and also a member of the International Steering Committee. He was accompanied by his wife, Dr. C.K.R. Bertram. Dr. G.C.L. Bertram was on a four month visiting Professorship awarded to him by the Royal Society.

During their stay, they visited a number of fishing villages and discussed with fishermen, the possibility of their contributing to the Committee's efforts. As a result of information thus received, Dr. C.K.R. Bertram strongly advocated that the Committee exploit these sources in its drive to increase the number of live manatees in captivity.

#### RESEARCH NEEDS

Too little is known about manatees reproduction. In Guyana, the study is focussed on husbandry. In this respect, all manatees in captivity were branded and specific measurements recorded. Subsequent checks revealed that the brands were still legible after a year. Rates of growth were also measured.

VISITS

Guyana was represented by Cde. F. Mongul at the Mammals of the Sea Conference which was held in Bergen, Norway, in September 1976.

## REPORT OF THE

MEDICAL RESEARCH COMMITTEE

- Chairman ... Cde. Omawale  
Senior Lecturer, Biology Department, U.G.
- Members ... Cde. E. Austin  
Paediatrician, Public Hospital - Georgetown
- Cde. R.L. Baird  
Chief Medical Officer, Ministry of Health
- Cde. L. Chin  
Factory Manager, Guyana Pharmaceutical Corporation
- Cde. W. Chin  
Medical Superintendent  
Public Hospital - Georgetown
- Cde. L. Godette  
Lecturer, Health Sciences Department, U.G.
- Cde. F. Mongul  
Principal Veterinary Public Health Officer  
Ministry of Health
- Cde. J.J. Niles  
Dean, Faculty of Natural Sciences,
- Cde. E. Simon  
Senior Govt. Bacteriologist  
Central Medical Laboratory  
Ministry of Health
- Cde. U.O.D. Trotz  
Dean, Faculty of Natural Sciences, U.G.
- Cde. F. Williams  
Medical Superintendent  
Medical Arts Centre

MEETINGS

There were six meetings during the year at which attendance was generally good. Average attendance per meeting was seven. Members attended on average, 66% of meetings ranging from 100% to 16%.

PROJECTS

During the year, the Committee administered six research projects including two new ones. Because of some difficulties experienced, a new system of liaison was established. Under this system, each committee member is responsible for informal liaison with the researcher(s) involved in at least one project. This has helped, to some extent, in the communication between the Committee and researchers. It functions also as a "trouble-shooting" device of some assistance to the Secretariat of NSRC.

The Committee adopted proposals regarding administrative procedures for projects. These recommendations will go to the National Science Research Council Executive Committee which will hopefully adopt them with any necessary modifications. Implementation of the proposals will likely reduce some current conflict and misunderstanding with respect to sources of responsibility and authority for policy and administrative measures concerning projects.

The administration of nutrition projects was transferred to the Nutrition Research Institute after its establishment. The Committee will receive regular reports from the Nutrition Research Institute on the progress of those projects which are identified below by an asterick.

i) Towards the Elimination of Protein Energy Malnutrition

This project was divided into three areas of study:-

Part (a) -- A follow-up investigation on a previous study.

This involved about 300 children still attending clinics, as well as some of those discharged.

Part (b) -- A detailed socio-economic investigation of

moderate to severe Protein Energy Malnutrition encountered in Maternal and Child Health clinics

and the children's ward, Georgetown Hospital.

Part (c) -- Investigations of possible modifications to

infant and young child feeding practices among

nutritionally at-risk groups in Guyana. Part (b)

has been completed and (a) and (c) are nearing

completion; most of the data has been collected

and is now being collated.

Onuoha-Moses.

ii) \*Nutritional Anaemias

Field work on this project began on September 6 and ended on November 30, 1976. A progress report is expected shortly.

Personnel involved in project -- Cde. A. Johnson.

iii) \*Dietary Survey Amongst Amerindians

Field work on this project has been completed, and data is being collated. Personnel involved in project - Cde. D. Grant.

iv) \*Ecological Survey of the Cabouri Fly

Work on this project is continuing. A grant from the Medical Research Council (UK) for 1976 and 1977 has been received for this project. This enabled scientific inputs from CAREC.

Personnel involved in project - Cdes. M. Zamir, S. Humphrys and

Dr. W.E. Tikasingh, CAREC.

v) Evaluation of High-Risk Antenatal Clinics

Work on this project commenced only recently and no reports are yet due.

vi) \*Management of Malnourished Children

(Children's Ward, Georgetown Hospital)

Work on this project has come to a temporary halt until proper conditions for scientific work and administration can be assured.

vii) The following projects have been approved, but have not yet commenced:-

1. Investigations into the levels of pesticides in crops;
2. Investigations of levels of antibiotics in poultry meat; and
3. Survey of the prevalence of Diabetes and Sickle-cell Anaemia in Guyana.

LECTURES AND WORKSHOPS

The annual NSRC Lecture which was held in memory of the late George Giglioli in February was delivered by Professor Bruce-Chwatt, Director of the Wellcome Museum of Medical Sciences. It centered on the life and work of Dr. Giglioli who was instrumental in the eradication of malaria from the coastland of Guyana. His son, Marco Giglioli, a highly reputable Entomologist, was present for this occasion. Apart from the main lecture at the University of Guyana, Turkeyen Campus, seminars were conducted in the Rupununi and in New Amsterdam.

RESEARCH PRIORITIES

The Committee attempted to solicit a wide spectrum of opinion on the health problems of Guyana. Response was somewhat disappointing,

but discussions will be based on those that were received. When this is taken together with statements from the CARICOM Secretariat (Health Desk) and the CMD, the priorities will have been tentatively established for future medical research. A meeting of the Medical

#### OVERSEAS VISIT

The Chairman represented the Committee and the National Science Research Council at the 21st Meeting of the Commonwealth Caribbean Medical Research Council (CCMRC). Discussions at the meeting suggested that representation was beneficial and should be continued. Only one paper was offered for presentation through the Committee. The paper entitled, "An Evaluation of the Role of Pre-school Clinics" was presented by Anne Rodrigues of the University of Guyana. Cde. Rodrigues' attendance was financed by NSRC.

#### MISCELLANEOUS

The Committee agreed to support the proposal that NSRC be a co-sponsor of the annual meeting of the Caribbean Association of Nutritionists and Dieticians (CANDI) to be held in Guyana during 1977.

In an attempt to support and encourage the implementation of a Food and Nutrition Policy for Guyana, the Committee discussed the document recently adopted by Cabinet. Several suggestions were made to the relevant government agencies which it is hoped will help improve and expedite the nutrition planning process in Guyana.

In September, the Nutrition Research Institute was established in the University of Guyana. The Institute which will be financed by NSRC for a period of three years, then by the University itself, was established following recommendations from the Medical Research Committee.



## OUTLOOK

The Committee functioned regularly and effectively during 1976 with lively participation from the majority of members. The outlook for 1977 may appear somewhat bleak, since the vote requested by NSRC will be cut drastically. These cuts will particularly affect projects and the Nutrition Research Institute. However, with continued active attendance at meetings and full participation of members, 1977 should see the Committee doing its fair share to promote the development and application of science for the betterment of Guyana and its people.

## REPORT OF THE

SCIENCE AND INDUSTRY COMMITTEE

- Chairman           ...   Cde. L.E. Ramsahoye  
Lecturer,  
Department of Physics, U.G.
- Members           Cde. P.A.D. Allsopp  
Technical Specialist  
Ministry of Economic Development
- Cde. P. Boyce  
Operations Manager  
Guyana Oil Company
- Cde. D. Chase  
General Manager  
Small Industries Corporation
- Cde. T. Fletcher  
Managing Director  
Terrence Fletcher Associates
- Cde. R.M. Glasford  
Technical Director  
Guyana Sugar Corporation
- Cde. S. Hinds  
Process Superintendent, Alumina Plant  
Guyana Bauxite Company
- Cde. E. Hopkinson  
Commissioner  
Geological Surveys & Mines
- Cde. E. Humphrey  
Manager, Bauxite Process & New Products  
Guyana Bauxite Company
- Cde. I. Jordan  
Managing Director  
Aubrey Barker Associates

Cde. K.E.D. Potter  
Chief Works Officer  
Ministry of Works & Housing

Cde. Janusz Radzik Sochacki  
Chief Chemist  
Guyana Liquor Corporation

Cde. U.O.D. Trötz  
Dean  
Faculty of Natural Sciences, U.G.

Cde. G. Walcott  
Senior Lecturer  
Chemistry Department, U.G.

Cde. R. Westmäas  
Dean  
Faculty of Technology, U.G.

Cde. R. Wilkins  
Director  
Guyana Sugar Corporation

The Committee met five times for the year during which meetings it tried to rationalise its operations and determine what could be done to bring about its truly operational function as an advisory body to Industry. It was conscious of the fact that it had no way of knowing Government's plans until projects were about to be implemented. Therefore, it was felt that a Scientific Officer would be able to trouble-shoot the Industrial sector and provide the Committee with the opportunity to assist.

A Scientific Officer was therefore recruited in June. At the request of the Committee, a survey of scientific and technological personnel in the country was started, and the Scientific Officer began to liaise with the Small Industries Corporation. He was able to provide assistance on the acquisition of the Berger Paint Company (Guyana) by the Guyana Government and to the Ministry of Co-operatives and National Mobilisation on the feasibility and the manufacture of a cement-based paint.

The projects being funded by the Committee are continuing, viz:-

1. Woods of Guyana with reference to their pulpability; and

The Committee also funded one new project, viz: The Recovery of Copper from the Groete Creek. It adopted a clear policy surrounding the support of research related to existing industry, namely, that the industry should be consulted on the usefulness of the research and should be asked to support it in some way. The Committee is concerned about the amount of scientific research which can be accomplished with the limited resources available. It therefore adopted a new approach, namely, to refrain from funding scientific research except in the most exigent cases until the Applied Institute of Science and Technology is completed, and concentrate on building up the technical manpower support required for scientific and technological research.

In view of the information acquired on the Industrial sector by the Scientific Officer, the Committee also undertook a comprehensive view of the problems of technology transfer in the acquisition of new Industry and the areas in which gains could be made when buying equipment and in the maintenance and utilisation of such equipment. A study of the situation is being made to advise the relevant organisations.

The Committee recognises the limitations it is faced with in view of the historical development of science and technology in the country and therefore continues to place emphasis on the development of the infrastructure required for industrialisation.

**\* \* \* \* \***  
**F I N A N C E**  
**\* \* \* \* \***

Council's funds are provided annually by Parliament. The provision for 1976 was \$300,000. The audited statement of Accounts for this year is attached to this report in accordance with the Act.

**Auditors:** The Director of Audit,  
Audit Department,  
Parade Street, Kingston,  
Georgetown.

**Bankers:** The Guyana National Co-operative Bank,  
G.P.O. Branch,  
G.P.O. Building,  
Robb Street,  
GEORGETOWN.

AUDIT CERTIFICATE

The attached Accounts of the National Science Research Council for the year ending 31st December, 1976 have been examined in accordance with Regulation 14 (1) of the National Science Research Council Act No. 26 of 1974. I have obtained all information and explanations that I have required, and in my opinion, the Income and Expenditure Statement and Balance Sheet exhibit a true and fair view of the Council's affairs as at 31st December, 1976, subject to the observations contained in my report, dated 14th September, 1977.

SIGNED: R.P. FARNUM  
DIRECTOR OF AUDIT

AUDIT DEPARTMENT,  
121 PARADE STREET,  
KINGSTON,  
GEORGETOWN.

DATED: 14th September, 1977

NATIONAL SCIENCE RESEARCH COUNCIL  
 BALANCE SHEET AS AT DECEMBER 31, 1976.

(52)

LIABILITIES		ASSETS	
Accumulation Fund	57,066.54	FIXED ASSETS:	93,964.11
Sundry Creditors	19,530.10	SUNDRY DEBIORS:	
Balance - 1st January 1976	114,655.97	Imprest Advances	723.00
		Specific Funds	37,220.56
		Other	4,064.16
		Deposits	<del>520.00</del> 42,527.72
		SUSPENSE ACCOUNT	894.53
		CURRENT ASSETS	
		<del>Cash in Hand</del>	
		General Account	.26
		Imprest Account	1,050.00 1,050.26
		<del>Cash in Bank</del>	
		General Account	49,586.99
		Imprest Account	<del>3,229.00</del> <del>52,815.99</del>
	<u>\$191,252.61</u>		<u>\$191,252.61</u>

NATIONAL SCIENCE RESEARCH COUNCIL  
INCOME AND EXPENDITURE FOR THE YEAR ENDED  
DECEMBER 31, 1976.

(53)

EXPENDITURE	INCOME
Personal Emoluments	Remittance: Sub-head 6
90,379.23	400,000.00
Housing Allowance	Remittance: Sub-head 11
10,890.20	562,898.00
Travelling Allowance	SPECIFIC AND OTHER FUNDS:
10,354.84	<u>Hydropower Seminar:</u>
Entertainment Allowance	C.F.T.C.
1,300.00	20,072.56
Honorarium	C.I.D.A.
1,200.00	13,060.00
Gratuity	U.N.E.P.
5,400.00	3,714.75
Rent	U.N.E.S.C.O.
5,400.00	4,590.00
Electricity	U.M.D.A.
2,810.38	10,000.00
Telephone	G.A.P.E.
12,880.00	<u>1,000.00</u>
Postages, Cables and Telegrams	52,437.31
716.09	<u>Shrimp Sampling Project:</u>
N.I.S.	South East Fisheries
2,292.25	Centre, Miami Lab.
Bank Charges	5,341.72
60.00	<u>Kabowra Fly Project:</u>
Group Insurance	P.A.H.O
803.00	25,660.05
Audit Fees	
750.00	
Maintenance of Office Equipment	
534.58	
Maintenance of Vehicles	
7,381.75	
Maintenance of Building and Compound	
13,217.42	
Uniforms	
1,721.85	
Stationery	
12,952.71	
Accessories and Miscellaneous	
4,137.72	
Security	
14,408.92	
Printing and Publications	
1,091.60	
<u>200,682.54</u>	<u>1,046,337.08</u>
C/Fwd.....	



EXPENDITURE		INCOME	
	B/Fwd.....	200,682.54	1,046,337.08
Books and Journals		22.96	
Membership of Professional Bodies		1,449.80	
Staff Development		100.00	
Travelling Council Members		13,875.00	
Annual Lecture		10,686.53	
Conferences and Tours		59,589.89	
Science Policy Workshops		6,608.01	
Iwentipu Expedition		1,093.68	
Hydro-power Seminar		66,001.91	
<u>Agricultural Research Committee:</u>			
Shrimp Sampling Project	4,014.11		
Agricultural Documentation	<u>150.00</u>	4,164.11	
<u>Bureau of Standards Committee:</u>			
		3,979.28	
<u>Forestry Research Committee:</u>			
Charcoal Project		1,033.00	
<u>Medical Research Committee:</u>			
Beri-Beri	273.47		
High Risk Clinics	3,000.00		
Nutritional Anaemias	4,394.99		
Pre-school Protein Energy			
Malnutrition	12,691.96		
Nutrition Research Institute	9,000.00		
Seminar on Health Education	30.60		
Kabowra Fly Project	<u>22,540.07</u>	<u>51,931.09</u>	
	C/Fwd.....	421,217.80	1,046,337.08

