



**THE
CARIBBEAN
RESEARCH
INSTITUTE**

1965—1975

A TENTH ANNIVERSARY REPORT

COLLEGE OF THE VIRGIN ISLANDS

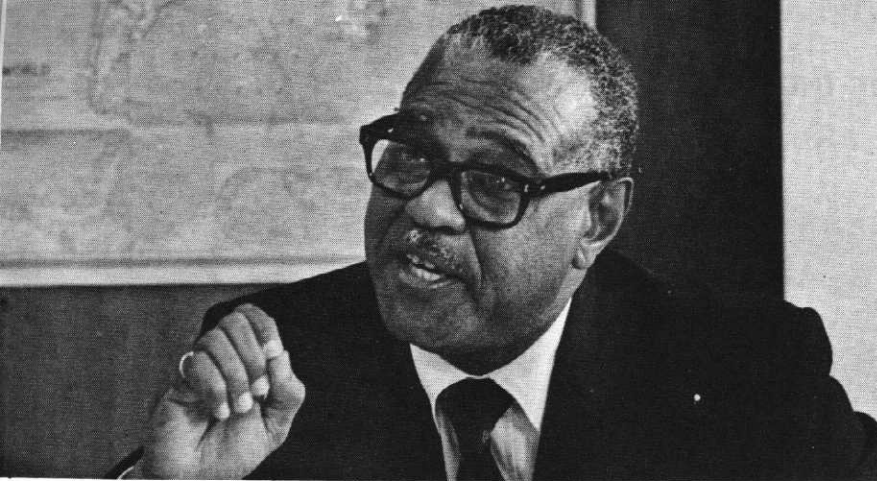


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Dr. Norwell E. Harrigan, director of the Caribbean Research Institute since July, 1973. Dr. Harrigan served formerly as a CRI Research Associate responsible for the Inter-V.I. Relationship study.

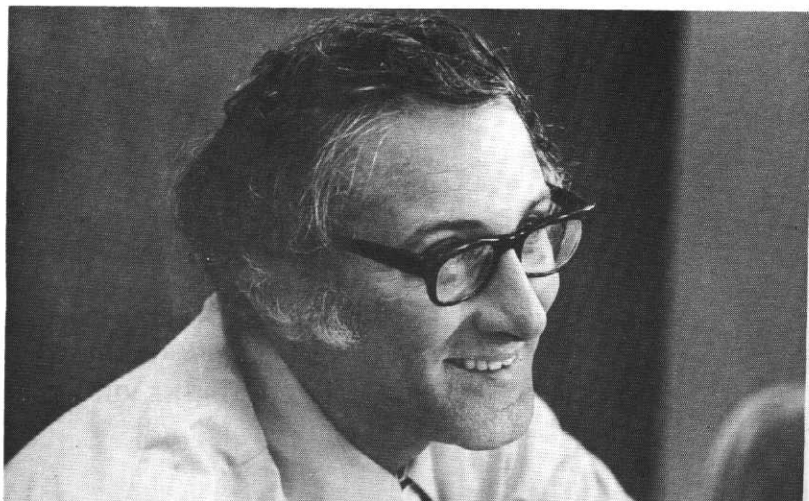


Dr. Pearl I. Varlack, Assistant Professor of Elementary Education, and CRI Senior Research Fellow and interim coordinator of the Educational Research Unit.



Ms. Beverly Bandler, CRI Programs Coordinator and director of the Institute's Environmental Education Program.

Dr. Jerome L. McElroy, Assistant Professor of Economics, CVI, and CRI Senior Research Associate and Coordinator of the Socio-Economic Research Unit.



COLLEGE OF THE VIRGIN ISLANDS

Lawrence C. Wanlass Ph.D.
President, College of the Virgin Islands
Arthur A. Richards Ed.D.
Provost and Dean

**CARIBBEAN RESEARCH INSTITUTE
ADMINISTRATION**

Norwell Harrigan M.B.E., Ph.D.
Director, Caribbean Research Institute
Beverly G. Bandler
Programs Coordinator
Marilyn T. Nibbs B.A.
Office Supervisor/Bookkeeper
Elena R. Lynton
Secretary to the Director

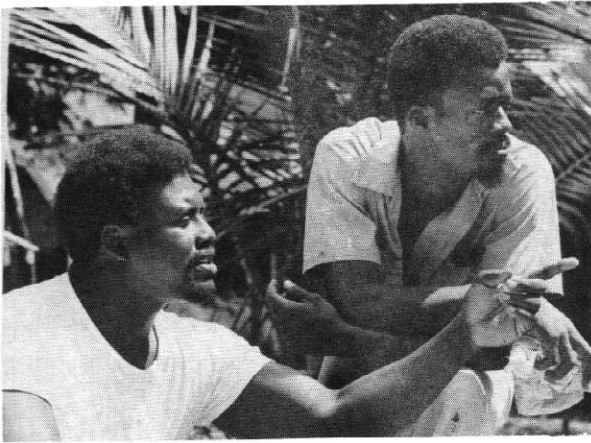
RESEARCH

Wesley E. Nelson Ph.D.
Director, Water Resources Research Center
Vacant
Director, Ecological Research Station
Jerome L. McElroy Ph.D.
Coordinator, Socio-Economic Research Unit
Community Research Center
Pearl I. Varlack Ph.D.
Coordinator, Education Research Unit
Community Research Center

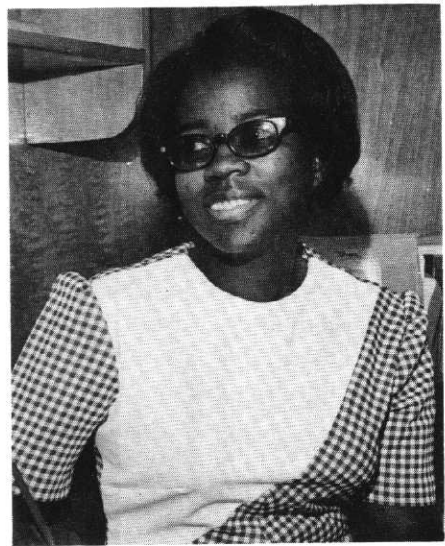
HONORARY FELLOWS

Leonard Shorey, Ph.D.
Education
University of the West Indies
José Villamil, Ph.D.
Planning
University of Puerto Rico
Carl Reidel, Ph.D.
Land Use
University of Vermont
Máximo Cerame-Vivas Ph.D.
Ecology
University of Puerto Rico

CRI STAFF



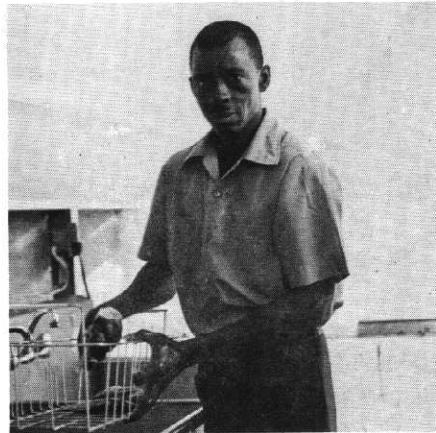
Llewelyn Sewer Bob Fleming



Elena Lynton



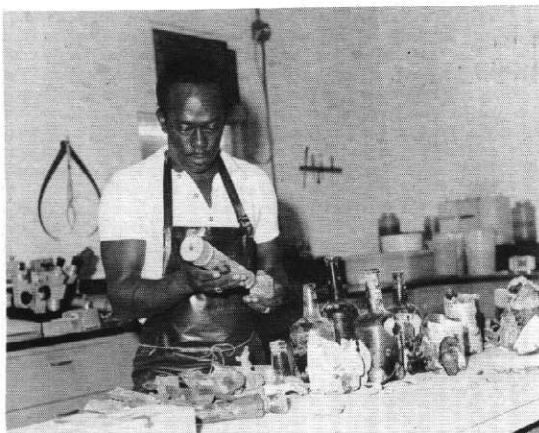
Elvin Fahie



Charles Harrigan



Thamina Shalhout



Oliva Christian



Janice Francis Marilyn Nibbs

PROLOGUE

Research is defined in the Oxford English dictionary as “an investigation directed to the discovery of some fact by careful study of a subject; a course of critical scientific enquiry” (1639). More recently and exhaustively in Webster New International dictionary as “a studious enquiry or examination; especially critical investigation or experimentation having for its aim the discovery of new facts and their correct interpretation, the revision of accepted conclusions, theories or laws in the light of newly discovered facts or the practical application of such new or revised conclusions, theories or laws”.

The Encyclopedia Britannica records research as including a wide variety of work. First, there is basic research which, according to the National Science Foundation, includes “research projects which represent original investigation for the advancement of scientific knowledge and which do not have specific commercial objectives”. Then there is applied research which is expected to have a practical pay-off. This distinction between basic and applied research is not clear cut. Fundamentally, the distinction is in the motivation of the investigator. In many cases both motives, new knowledge for its own sake and new knowledge for practical advances, are involved.

These statements give an indication of what the Institute was intended to do and the magnitude of the task. The “where”, however, presented an equally difficult problem.

In using the term ‘Caribbean’ today, it is also necessary to have a definition handy. At one time the reference may be to the islands stretching from Jamaica at the Western tip of the northern Antillean range through the groups known as the Virgin, the Leeward and the Windward islands to Barbados and Trinidad at the eastern tip of the southern archipelago. More often than not the “rimlands” of Guyana and Belize are included as well as Cayenne, Surinam and the off shore Netherlands Antilles. In a further expansion the other “rimlands” of Venezuela, Columbia, and the Central American Republics are also included.

While both the “what” and the “where” set standards difficult to attain an effort had to be made and a course of action determined. It was preferred to think in terms of what is called problem-oriented research and the policy of the Institute is one which seeks relevance to local needs and problems, which seeks to derive a broader base of knowledge about insular environments from a case study approach and which seeks to relate its specific work on islands to that of the larger scientific community. It is seeking a balanced perspective of the particular and the general, the archetypical model and the replica, the rule and the exception, the human community and the insular environment, and is attempting to make regular use of the cybernetic feed-back principle (both negative and positive) between the diverse

perspectives of the scientist and the decision-maker, between the world of abstract theory and the changing environment, between the search for scientific principles and the search for solutions (even if tentative) to contemporary problems.

Here are four statements which have been used as guides and comforters:

“Tomorrow’s ‘help wanted’ advertisements are being written by the research of today. Industry’s progress and the employment opportunities it will bring are being determined now in the quiet confines of the laboratory”.

The Story of Employment Possibilities

“We need some fantastic conjectures at first in order to have anything to test”.

The Saber-Tooth Curriculum

“What we need is not the will to believe but the wish to find out, which is the exact opposite.”

Bertrand Russell

“Research teaches man to admit he is wrong and to be proud of the fact that he does so, rather than try with all his energy to defend an unsound plan because he is afraid that admission of error is a confession of weakness when rather it is a sign of strength”.

H. E. Stoeche

THE BEGINNINGS

In March, 1962, after a period of serious investigation, the College of the Virgin Islands was established by an Act of the Virgin Islands Legislature and formally opened the following year with approximately 40 full-time students, some eight instructors and a handful of courses.

The establishment of a college in and for the Virgin Islands was in itself a significant achievement in view of the strong positions for and against the institution taken by various individuals and groups. But the fact that one of the functions of higher education, research--an effort to extend the boundaries of knowledge (and education is primarily concerned with knowledge, both increasing and disseminating it)--was accepted by a college barely a year old was perhaps even more significant. In mid-1964 preliminary steps were taken for the establishment of the Caribbean Research Institute, and it was formally inaugurated as “a semi-autonomous entity within the College of the Virgin Islands” on 4, January 1965 with the assumption of duty of the first director Dr. James Blaut, a geographer.

The goals and objectives of the Institute were stated as follows:

The Institute has two primary functions: On the one hand, it serves the Caribbean areas as a whole by undertaking and stimulating research on all parts of the region. On the other hand, as the research agency of the College, the Institute seeks to bring scholars to the campus, to encourage faculty research, to provide in the College a central research agency for the Virgin Islands (much as a land-grant College does for its State) and, in general, to assist in the academic growth of the parent institution.

With two faculty members of the College (the director and the administrator) serving as full-time staff and other members of the faculty (including the president and the dean) as research fellows, work was begun in several areas. By the end of 1965 a research structure was evolving around four major research programs:

Socio-Economic: This included economic potential of V.I. submerged lands, air terminal and air space utilization in St. Thomas, a sample of Virgin Islands neighborhoods and households and socio-cultural community study based on this sample.

(ii) Marine Ecology and Fisheries: This dealt primarily with marine environments with marine environments and fisheries potential.

(iii) Agriculture and Food Supply: This focused on the economic and cultural geography of small holder agriculture in the Caribbean and the problem of conserving rural areas in the face of expanding demand for urban and recreational land.

(iv) Urbanization Processes in the Caribbean.

In one year the Institute had grown at a fairly rapid rate. Twenty projects had been undertaken in six Caribbean countries, nine being completed, and staff had reached to four full-time and eight part-time members in anthropology, bio-geography, cultural geography, political science and sociology.

Grants of over \$200,000 were obtained and the College provided a sub-vention of \$18,000. One bulletin, "Reconstruction of the Agricultural Economy of St. Croix" had been published and six others were either being edited or in press.

Significant also was the Eastern Caribbean Conservation Conference which was held at Caneel Bay, St. John, organized by the Institute and sponsored jointly by the American Conservation Association, the Government of the Virgin Islands and the College and attended by representatives of the American, British and French West Indies. Out of this conference developed the Caribbean Conservation Association (with headquarters at the Institute) and a Virgin Islands Conservation Committee. The Institute was also serving in a consultant capacity to various local and Federal agencies.

In 1966, the Institute underwent fundamental changes in organization, administration and personnel, the most basic probably being the change of status from a semi-autonomous unit to a division of the College. While this was primarily a change in concept and attitude, the result was pronounced change in fiscal and administrative procedures which the Director reported as being "entirely beneficial to the Caribbean Research Institute".

By this time, too, a program in Marine Ecology and Fisheries had led to a conference of experts in biology and marine life which considered the establishment of an Ecological Station to undertake funded research programs dealing with marine and terrestrial problems of islands.

But the Institute was apparently losing momentum. The director resigned and the

Dean of the College was appointed to administer the Institute. In June 1967 he reported "development...has been indisputably rocky and uncertain. It is the nature of research activities to wax and wane. At this point C.R.I. as an idea and a program is sharply waning". At the same time he emphasized that because it is strategically located to attract the support of scholars and men of affairs, the Institute had a future; it needed active college support, cogent research concepts, and personnel (including a full-time director) to enable it to reach the "take off" point.

In November, 1967, Dr. Edward L. Towle, an historian of science and exploration, was appointed and assumed duties as director. He was a man of imagination, boundless energy and extensive contact (the qualities which his temporary predecessor had stated as necessary for the job), and once again the Institute began to move forward. It had by this time undertaken thirty-one projects of which eleven were active and the list of publications stood at thirteen.

After 1968 the focus of the Institute became increasingly oriented towards conservation, marine resources and water. While one study on the Arts and one on Education previously undertaken were published after 1967 the Inter-Virgin Islands Studies Program was the only new project undertaken in the social sciences. This produced the first comprehensive attempt to look at the British and United States Virgin Islands as an ecosystem and included one report on the inter-relationships of the islands, several journal articles, a doctoral dissertation and a forthcoming history of the British Virgin Islands. It also triggered two doctoral dissertations which attempted to look at Virgin Islands society and its education system from a theoretical perspective.

The other departure was a Remote Sensing Technology Program which was conducted on St. Croix in three projects funded by the National Aeronautics and Space Administration and one funded by the U.S. Air Force.

Marine resources projects included one fairly large project in Biototoxicology and smaller projects in Hydrogeology, Marine Archaeology, Lobster Management, Reef Ecology and Marine Pharmacology. Most of this work was undertaken from the Ecological Research Station at Lameshur Bay, St. John.

Conservation projects dealt with environmental management, natural resources control and historical site conservation and involved a renewed interest in the Caribbean.

Some twenty reports (nearly half of the total output) were the results of water quality control projects.

Fairly substantial funding was obtained. A tentative breakdown indicates that close to 50 percent of projects support came from the federal government with the other half split about evenly between the local government and private sources.

By the academic year 1970-71, the College had seen tremendous growth. The student body had grown to 1,446 (416 full-time and 1,030 part-time) with a faculty and professional staff numbering 108 and it was fully accredited. There was similar growth in the Institute and in a period which can fairly be described as hectic there was neither the time nor the staff for making a critical analysis of the Institute. Research activities were once more on the wane. By purely fortuitous circumstances in the following year, the major research projects were concluded, new leadership given to the Institute and the opportunity provided for evaluation, to review policies and programs, to ask other questions and (if possible) obtain answers, to blaze new trails.

PRESENT PROGRAMS

The year 1972 was one of change at the Caribbean Research Institute. During the first six months several projects terminated by expiration of contracts. The Environmental Laboratory in St. Croix was closed when the project director transferred to another Institution and the VIERS Toxicology Laboratory on St. Thomas was closed when additional funding was not obtained.

Later in the year the Water Laboratory on the St. Thomas campus was closed, the contract between the College and the Virgin Islands Government for water pollution studies having come to an end. The Caribbean Conservation Association Development Program moved to a new research organization headed by the former director who was also president of the association.

There were also important personnel changes. In April 1972 Dr. Towle announced his resignation, which action, according to a statement made to the press, "reflected certain long-standing differences in policies concerning the Institute". In May it was announced that Dr. Auguste Rimple, a Virgin Islander employed by Arthur D. Little Inc., had been offered the directorship and that Dr. Norwell Harrigan, a former research associate, had agreed to return as associate director. He assumed duty on June 1. Eventually, Dr. Rimple did not accept appointment and Dr. Harrigan acted as director from July 15, 1972 and was confirmed in the appointment with effect from July 1, 1973.

With the installation of new leadership the President requested an in-depth review of the policies and programs of the Institute which should take fully into account two important statements made by college authorities in May, 1972:

- (a) **"That the Institute would work more in the field of economic development and cut back the emphasis on marine involvement, expanding social research and other education aspects."**
- (b) **"That it would play an increasing role in Virgin Islands community affairs."**

In a preliminary report the director pointed out that rapid growth was responsible for much of its troubles. The Institute had depended to a considerable extent on sponsored projects and it was not always possible to predict what would not be realized. There had been a high turnover of staff which caused more than a little confusion. Directions, which often depended on sources of funding, had not always been clear, and this led to more confusion, to disagreements, and to ill-feelings; and, for reasons which cannot always be pinpointed, relations with college faculty and with students had been less harmonious and integrated than could be hoped for or expected; lines of communication had often been blocked. The image of the Institute

had been seen differently by different publics; while some regarded the work as successful and stimulating, others saw it as failing in its primary functions. "Any objective assessment of the Institute", he concluded, "must recognize that considerable perspicacity was shown in defining the mission and that some success has been achieved. There would appear to be no need for a redefinition but rather a re-orientation with the emphasis being placed on the Institute as a central research agency (as a land grant college) for the Virgin Islands and the encouragement of faculty research in the College. While work in the Caribbean region should continue, it would not be given priority."

This review led to action in three main directions:

- (a) structural re-organization
- (b) formulation of new policies
- (c) efforts to project a new image of the Institute and its mission.

The Institute has now settled into a structure designed to reflect more clearly its research objectives. (An organization chart appears as Appendix I hereto).

ADMINISTRATION

A review of the Institute's personnel and procedures revealed several unsatisfactory aspects and pointed to the need for sound administrative arrangements capable of providing a viable supporting role for the Institute's primary function--research. Accordingly with a re-allocation of space, an updating and streamlining of procedures and re-assignment of personnel the following units were established:

DIRECTORS OFFICE

The Director of the Institute is formally charged with the responsibility to the President of the College for the development of the Institute and the coordination and supervision of its activities. In accordance with this responsibility and flowing from the review of the Institute's goals and direction a number of important policy decisions were taken which affected the Institute's operations.

While the Institute is officially a division of the College, it had pursued for several years a semi-autonomous course. It was determined that such a policy deviation was not in the best interest of the College, and attempts were made to bring the Institute into the College. Closer cooperation between the Institute and the College administration over policy formation and operational decision-making has been pursued. And the director has been active in the College's Divisional Council and Administrative Council (of which he is ex-officio member) and in the Graduate Council and several college committees on which he serves by appointment. The director also holds formal faculty appointment as a Lecturer in Education and Political Science and taught a course in the graduate program in "The Sociological and Anthropological Foundation of Education in the Virgin Islands" on both the St. Thomas and St. Croix campuses during the Spring Semester 1973-74.

A second policy decision concerned the future of the Institute if it continued only to search for sponsored research projects and do "what the funds obtained want done". The decision was made that the Institute must become an "adaptive Institute" and that research priorities for the islands should be determined by College/Community cooperation, with funding sought to meet felt needs. Towards this end, a

16-member Research Liaison Committee, consisting of members of the Institute's staff, the College's administration and academic divisions, the Agricultural Extension Service, and representatives of the territorial Department of Conservation and Cultural Affairs was set up in the third quarter of 1972. The committee contributed to the planning of the Virgin Islands Research Needs Conference held in April, 1973, to the recommendations of which the Institute is responding.

Following the Research Needs Conference, it was determined that the Liaison Committee would be replaced by new committees dealing with Ecological Research, Socio-Economic Research, Education Research, and Water Resources Research. These committees would be comprised of representatives from the Institute, other division of the College, agencies of the V.I. and U.S. Government, specialists from both the Caribbean and U.S. mainland and to institute a policy of coordinated effort based on consensus, with the committees serving in an advisory capacity. (A list of committees appears as Appendix II hereto).

Another policy decision involved the question of funding and budgeting. It has now been determined that a larger proportion of the annual Legislative appropriation should be allocated specifically to research efforts, providing for both matching funds and "in-house" research, as opposed to being allocated solely for administrative costs, and although not specifically budgeted, an approximate one-fifth of the appropriation for the Institute was set aside for direct research expenses in FY 74.

While the demand of much research prohibits extensive involvement due to the availability of time, it is desirable that College faculty be associated with the Institute on a "joint-appointment" basis. New budget proposals would make such appointments possible and progress toward this end is being made.

Policy decision also centered on relationships. The Institute has had close working relationships with several local organizations; regional, national and international, professional, scientific and conservation organizations; and academic and research institutions. The need for this is obvious but greater selectivity appears necessary. On the local level the director addressed high school graduating classes and civic and professional organizations; participated in seminars and panel discussions sponsored by various groups; and appeared on television and radio in an attempt to project a new image for the Institute and convince the community that the College, through its research arm, is committed to seeking solutions to community problems.

Under the provisions of Act No. 3166 of the Virgin Islands Code the director serves as a member of the American Revolution Bicentennial Commission. He was elected as vice-chairman of the Steering Committee and Chairman of the Research Committee. The director also served by appointment of the President of the Virgin Islands Legislature as a member of the Cost of Living Commission, and the Cultural Heritage Commission.

On the regional level the Institute continued participation in the Caribbean Conservation Association and the Association of Caribbean Universities and Research Institutes. The director attended meetings of both organizations.

The director paid a familiarization visit to government agencies and foundations in Washington, D.C. with the assistance of the Overseas Liaison Committee of the American Council on Education in March, 1974. He also served as Visiting Caribbean Scholar at the University of Vermont's new Caribbean program in April, 1974 where cooperative relationships were discussed. In May 1974, he attended a meeting in New

Orleans as a preliminary to the College joining the Consortium on Research Training (CORT) head-quartered at Bennett College in Greensboro, South Carolina. CORT is funded by the U.S. Office of Education and is a joint effort currently involving 15 institutions of higher education. It was formed for the purpose of strengthening research competencies of both faculties and students in predominantly black colleges and universities. With the formal entry of the College into the Consortium in September, 1974 a Research Training Committee was established which also serves in an advisory capacity to CORT. In addition to the Director who was appointed Campus Coordinator to CORT four faculty members have attended training workshops in Atlanta, Georgia. and it is proposed to hold workshops on both campuses of the College before the end of July, 1975.

The Office of the Director also assumed responsibility for personnel matters. Administrative staff changes included the discontinuance of the positions of Executive Secretary, Fiscal and Supply officer and Clerk/Bookkeeper and the creation and filling of two new posts of Office Assistant and Bookkeeper and Supply and Services Clerk. The post of Office Supervisor and Projects Assistant was re-entitled Programs Coordinator and expanded duties assigned. On the research side a new post of Director, Water Resources Research Center was created and filled.

Provisions had been taken for the appointment from time to time and as the need arises of the following categories of researchers--senior research associates and research associates (on the Institute's payroll). Senior research fellows and research fellows (college faculty who are associated with but not paid by the Institute); visiting research fellows; research assistant (paid or unpaid); and research affiliates (working outside the Institute on projects in which the Institute is interested). Honorary Fellows serve as consultants to the Institute.

While the scope and funding of the Institute make the employment of students difficult, five students in economics, education, social work, biology and marine science were given part-time employment.

(A staff list appears as Appendix III hereto.)

THE CENTRAL ADMINISTRATION SERVICES UNIT

The unit was established as a means of improving efficiency and reducing costs. Supervised by the Office Supervisor and Bookkeeper, it has responsibility for all fiscal matters, procurement and distribution of supplies, a central filing system and secretarial services. The unit works closely with the College's Business Office.

The unit undertook a complete re-organization of the central filing system with a view to improving effectiveness. A new method of allocating funds was introduced so that cost of the various aspects of the Institute's work could be more easily ascertained.

In the period of tight money in recent years, outside funding has been difficult to obtain. With only a few small federal grants the Institute began to revitalize its research activities largely on funds voted by the V.I. Legislature. Present local funding is at approximately the following level:

Caribbean Research Institute	\$103,500
Ecological Research Station	1108,700
Water Resources Research Center	29,000

The Federal FY 1975 allocation for Water Resources Research is \$40,000.

ANCILLARY PROGRAMS UNIT

For several years the Institute has sponsored occasional public conferences and lectures. It was the strong feeling during the planning for re-organization that if, as is generally accepted, the dissemination of findings and agitation for action is an integral part of the research process the former might well be useless and the latter impossible unless a climate exists in which both can operate. To meet this need it was necessary to systematize and expand activities which supported research and the Ancillary Programs Unit was created as a result. The Unit, which is supervised by the Programs Coordinator, has responsibility for the Public Affairs Program, Faculty/Student Activities, Publications, Publicity, and Special Projects focusing on public education.

The Public Affairs Program consisted of conferences and lectures including two Memorial Lectures which honor Dr. David Canegata of St. Croix (physician, judge, legislator and administrator), and J. Antonio Jarvis of St. Thomas (educator, historian, journalist and artist). Distinguished scholars were invited to serve as lecturers on both the St. Thomas and St. Croix campuses.

LECTURES

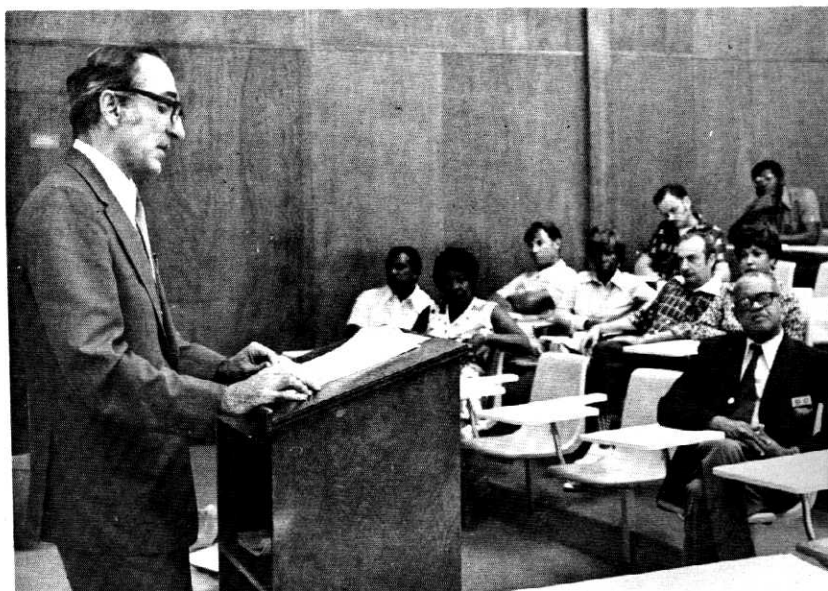
The inaugural *David Canegata Memorial Lecture on Public Affairs* was delivered by Dr. G. James Fleming, Professor of Political Science at Morgan State College in Baltimore, Md. and a native Crucian and CVI trustee, in December, 1972. Dr. Fleming's lecture was entitled, "The Perennial Problem of Making Decisions".

"Size and Survival: Planning in Small Island System" was the theme of the Second Annual David Canegata Memorial Lecture on Public Affairs, which was held in February, 1974. The lecturer was Professor José J. Villamil, acting director of the Graduate School of Planning of the University of Puerto Rico.

The inaugural *Antonio Jarvis Memorial Lecture on Education* was delivered by Dr. Leonard Shorey of the University of the West Indies during the fall Semester 1973-74. He posed the question "Is the Caribbean System of Education Relevant to the Needs of Our Society?"

Dr. Thomas Mathews, historian and research professor of the faculty of social sciences, Institute of Caribbean Studies of the University of Puerto Rico, gave the second lecture on education in December, 1974. Dr. Mathews theme was, "Caribbean Education: The Pursuit of Excellence in a Small Island Community".

Dr. Thomas Mathews, historian and research professor, shown giving the second J. Antonio Jarvis Memorial Lecture on Education.



Also, in the fall of 1973, the Institute has the opportunity of sponsoring a lecture by the director of Transport Control on the island of Bermuda entitled, "Automobile Legislation in Small Island Communities: the Legal and Social Implications."

The lectures are held on both St. Thomas and St. Croix, and are printed for public distribution.

CONFERENCES

"Virgin Islands Research Needs Conference"

Four conferences have been organized to date. In keeping with the Institute's objective to seek research priorities based on College/Community consensus, and with a view towards charting a course for the next few years for the greater benefit of all constituencies served by the College, CRI sponsored the Virgin Islands Research Needs Conference on April 24, 1973. The conference sought to ascertain what research had been done in the Virgin Islands and what ought to be done, and to assess the resources available to do research in the areas of ecology, water, education, and socio-economics.

Approximately fifty persons representing community agencies concerned responded to the invitation to join the quest for solutions to community problems, and some sixty recommendations were made. There was general agreement among the participants that the islands suffered from erratic compiling of data in all areas of research, a lack of communication among those doing research and an absence of integrated planning, the consequence of which was that the Islands were not adequately prepared to deal with the complex challenges and charges with which they were faced. The **Proceedings** of the conference were published and distributed to the public during the Summer of 1973.

"The Culture of the V.I. — Fact or Fantasy?"

The second conference held in December, 1973 was an initial attempt at implementing the recommendations of the Research Needs Conference. "The Culture of the Virgin Islands: Fact or Fantasy?" was the title chosen by a college/community planning committee, which agreed that no attempt could be made to conduct a definitive examination of Virgin Islands culture, but that the conference could serve as a starting point and offer a preliminary broad look at the validity of the concept. It was the Institute's hope that the conference would encourage ventilation of popularly-held notions of Virgin Islands culture and current commentary, and that this examination would serve as a catalyst for a serious in-depth and scientific long-term research effort, one with the sympathetic support and interest from the community at large. In order to encourage greater interest and participation in the effort, an essay contest was held on the subject for Virgin Islands 11th and 12th graders.

Over 200 people participated in the open discussions which were held on all three islands. There were interesting accounts of island traditions, and an apparent agreement that there is a Virgin Islands culture. The information gathered at the conference, however, did not lend itself to the publication of proceedings but will contribute to the Institute's data bank on social research in general and to an on-going cultural investigation in particular.

“Our Troubled Environment - Can We Save It?”

The third conference sponsored by the Institute concerned the Virgin Islands Environment and was held on May 10 and 11, 1974, on St. Thomas as part of an initial phase of a special project on adult Environmental Education. **“Our Troubled Environment - Can We Save It?”** sought to create public awareness by attempting to expose as many decision-makers and members of the general public as possible to the overall “status” of environmental problems and to specify areas in which new directions and policies might be indicated. The agenda was designed to: (a) identify the problems; (b) define goals and objectives; (c) examine alternative solutions; and (d) reach consensus on preferred solutions and priorities.

Over 200 individuals from government, business and the community at large attended the two-day event. They listened to five principal speakers from off-island who offered relevant expertise and experience in different environmental areas, and participated actively in the twelve discussion groups. The greatest interest appeared to center around economics and the environment, government’s responsibilities, historic preservation, and land use.

“We don’t understand our systems;” “We don’t know where we’re going or where we want to go;” “Government is not sufficiently responsive” - such was the consensus of the conference participants. They felt that action was needed, and that a lack of planning and the failure in law enforcement were major problems. All discussion groups noted that there had been little, if any, regard for the inter-relationships between economics, social concerns, and environmental issues. The conference enunciated a number of statements which will form a basis for action--whether in the area of research, education, government policy or public pressure.

The **Proceedings** of the conference will be available for distribution early in 1975.

“Water Resources Problems & Research Needs in the U.S.V.I.—”

The fourth conference, **“Water Resources Problems and Research Needs in the U.S. Virgin Islands”**, held in October, 1974 was a joint effort between the Water Resources Research Center, the V.I. Extension Service (also of CVI) and the Virgin Islands Conservation District on St. Croix. The objective of the conference was to increase both public and governmental awareness of the problems in meeting the increasing demand for water and the role that research might take in providing a solution of the more urgent needs. Open discussions were directed to the four major panel presentations made: “The Producers and Consumers”, “More Consumers,” “The Planners and Policy-Makers”, and “The Researchers.” Proceedings are being prepared for publication.

Over 200 Virgin Islanders attended the two-day Conference on the Virgin Islands Environment. Shown here is the opening plenary session May 10, 1974 at the Frenchman’s Reef Hotel.



PUBLICATIONS

Publications are an important aspect of the Institute's activities, and include reports on research findings as well as information likely to be of interest to the community at large.

Since 1972 publication of reports on projects undertaken earlier included five Water Pollution Reports resulting from the contract work done for the Virgin Islands Government (Division of Environmental Health) the final report on the preliminary one-year study of ciguatera fish poisoning, the final report on the Tropical Reflectivity project undertaken at the St. Croix Environmental Laboratory, and two papers - one a look at the Mangrove Lagoon for the layman, and the other on resource management programs for oceanic islands. Marine Archaeology Program reports, "Proton Magnetometer Survey of Marine Archaeological Sites in the Virgin Islands" and "The Excavation of the HMS Santa Monica," have been completed and are being printed for distribution. The **Proceedings** of the Virgin Islands Research Needs Conference was given wide publicity.

In an effort to be more effective in terms of advising the public of its activities, publications, etc., the Institute began publishing a "CRI Bulletin". The first issue was distributed in February, 1974, followed by issues in April, September, and November. The mailing list is currently around 700 people who live on all three islands. The Bulletin, which is free and available to the public, is an occasional publication expected not to exceed six issues a year.

SPECIAL PROJECTS

Projects which are not basic or applied research, but which fall into the area of public education, are undertaken by the Ancillary Program Unit of the Institute.

In the second quarter of 1973 the Institute received a one-year grant from the U.S. Department of Health, Education and Welfare to conduct an "environmental education project aimed at conditioning Virgin Islands citizens to environmental awareness and the need for correction in problem areas". The funding, authorized under Title I of the Federal Higher Education Act, assists colleges and universities in developing community service programs to help people solve community problems. A grant of \$8,050 was followed by a second grant in the amount of \$7,248 both matched locally for a two-year program. The conference on the Virgin Islands Environment represents CRI in kind support.

Two phases of work constitute the Institute's Environmental Education Program which is focused on air and water pollution, solid waste management, land use, wildlife, marine resources, historic preservation, economics and the environmental law, the responsibilities of both federal and local governments, the role of the citizen, V.I. education and the environment, environmental manpower, and environmental research in the Virgin Islands.

Phase I of the project is focused on **identification of environmental problems**, and is designed to expose the public to the problems, attempting to; (a) identify the problems; (b) define community goals and objectives; (c) consider alternative solutions and (d) determine preferable solutions and priorities. There are three specific activities within this phase: The first (see Conferences), was completed in May, 1974. A contract has been completed for the second, a series of 12 half-hour TV programs scheduled for the third quarter of 1975, with Channel 12, WTJX.

Phase II, initiated in June, 1974, focuses on **problem solving through citizen**

action. Activities in this phase include (1) a status report on the local environment and (2) workshops on citizen action planned for the last quarter of 1975 or early 1976.

RESEARCH

Having determined the primary research areas of the Institute for the next several years, three research "centers" were designated as the vehicles through which its objectives could best be realized. These are the following:

ECOLOGICAL RESEARCH STATION

The station established in 1966 on St. John, and particularly valuable for its uniqueness as a site relatively undisturbed by man. It has operated almost entirely in the field of marine biology under its own director. Of primary importance was the need to clarify the relationships of the Station to the Institute and the College.

A new Statement of Policy was issued indicating that the Station is to be administered and is to function as a subdivision of the Caribbean Research Institute. It is a facility for the conduct of research programs by in-house scientists, visiting scientists and college faculty, as well as contract research relating to the ecology of the Virgin Islands and island systems of the Caribbean. The overall mission of the Station as a research facility is the responsibility of the director of CRI, assisted by the director of the Station and an Ecological Research Committee.

The director of the Station is responsible for: (1) the administration of the station in all its aspects, (2) ensuring that all terms and requirements of the 1966 Memorandum of Agreement between the National Park Service and the College are met and/or adhered to; (3) the solicitation of research projects within the policy guidelines of the Institute and the preliminary review and evaluation of all proposals; (4) the coordination of all research programs conducted at or by the Station; (5) the development, maintenance and curating of all museum collections; (6) the development and maintenance of the research library on insular ecology; (7) participation as a professional in Institute and college-related research and other activities; (8) the conduct of personal research on a time-available basis in keeping with the general policy guidelines.

The Ecological Research Committee replaces the previous ad hoc Lameshur Advisory Board. The new committee is to serve in a consultative capacity on: (a) general policy for ecological research; (b) research proposals; and (c) publication of

Dr. William MacLean, CVI Assistant professor of biology, and an ecology class at the Lameshur VIERS facility.



CRI scientific ecological material. Its membership includes, in addition to College personnel representatives of government agencies and concerned citizens from all three islands.

In its first meeting the committee advised that an evaluation of the station work was desirable before new directions are determined. This was undertaken by Dr. Maximo Cerame Vivas, an ecologist of the University of Puerto Rico, and Dr. Carl Reidel, a land-use planner from the University of Vermont. The consultants had discussion with the committee and their recommendations are expected before the middle of 1975.

Visiting researchers at the facility are contracted by the Station director, and upon the approval of research proposals are appointed as Research Fellows of CRI. Doctoral work that has taken place at the facility over the past two years cover the following: Ecology of Eleutherodactylus Frogs of Puerto Rico and the Virgin Islands. The Carbonate Deposition in Inshore Areas in the Virgin Islands, and The Social Behavior in Fiddler Crabs. Senior research efforts included a Survey of Certain Floristic Components of St. John, Population Biology of the Agave, Population Fluctuations in Flora and Fauna of Eel Grass Communities of St. John, Life History and Growth Rates in West Indian Topshells, Comparative Study of Recent and Fossil Ostracods, Analysis of Coconut Endosperm as Protein Source, Systematics & Distributions of St. John Insect, Comparative Efficiency of Fish-Trap Designs, and Preliminary Survey of St. John Avifauna. Two projects undertaken with support from the Station were the Field Guide to the Natural History of Puerto Rico and the Virgin Islands and a study of Sandy Beach Dynamics on St. John.

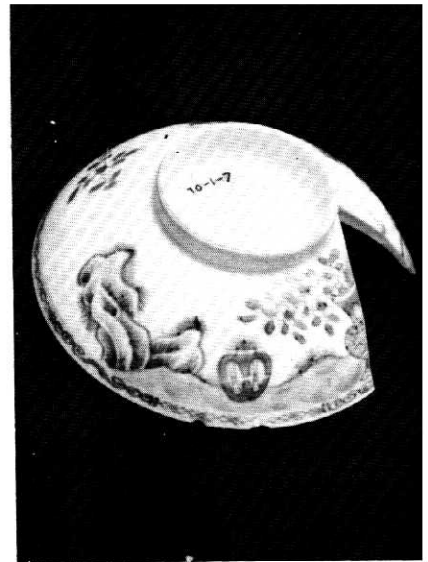
In-house research projects previously undertaken but completed in the past two years included a Preliminary Study of Ciguatera Poisoning in the Virgin Islands. Studies on Caribbean Sea Turtles and a Survey of Winter Migrant Bird Species, St. John. Two projects were undertaken by the Station director on a continuing basis: Survey of the Bat Fauna of St. John and Adjacent Cays; and Pollination Ecology of Night-Blooming Plants in the Virgin Islands.

The Marine Archaeology Program under the direction of the Institute's marine archaeologist completed two main projects: (1) the Proton Magnetometer Search for Marine Archaeological Sites in the Virgin Islands, funded by the National Endowment for the Humanities with matching funds from local residents, for an inventory and assessment of the marine archaeological resources of the Virgin Islands; (2) the excavation and preservation of artifacts from the HMS Santa Monica (1782), a



Visiting researcher, Dr. Julius Dieckert, tries his hand at coconut gathering for a study of coconut protein.

Artifacts from the HMS Santa Monica (1782). Left: A 4,000 reis Portuguese Gold Coin of King John V. Right: Porcelain Bowl.



wreck off St. John, which was funded by the V.I. Department of Conservation & Cultural Affairs. Both projects terminated in June, 1973, and reports resulting from these efforts completed. In addition, some assistance was given to the BVI Government through excavation efforts on their HMS Nymph (1783) wrecksite.

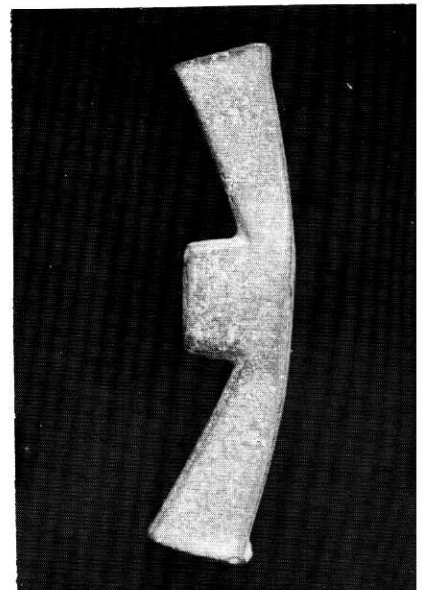
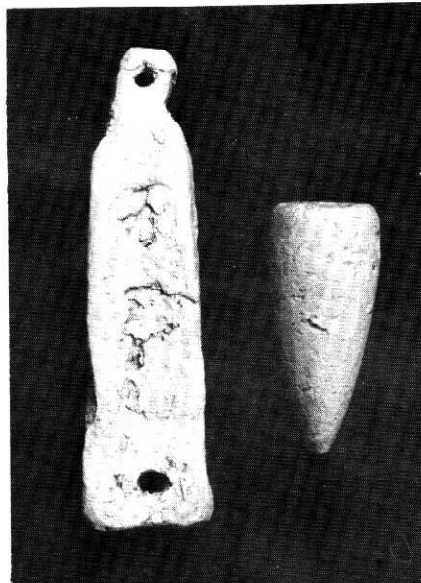
The Archaeology Preservation Laboratory continues to function under a chief technician. Plans for its future are the subject of discussion between the Institute and the V.I. Department of Conservation & Cultural Affairs.

The physical plant at the Station continued to be modified, an effort which was started in November, 1972. It had been determined that the facilities, while workable for limited activity prior to Tektite I and II and student residence, were not satisfactory to meet the needs of visiting investigators, many of whom require accommodations and working space over a period of several weeks. Two of the existing cabins were converted into accommodations and research "apartment" units, for up to three persons. Additional improvements were made in the terrestrial laboratory, the main laboratory and the kitchen facilities. Several small vessels are maintained for the assistance of scientists engaged in marine studies in addition to two vehicles for both staff and investigator use.

Mr. Marcus Buchanan who had served as director since 1971 resigned in September, 1974. Since then work at the station has been restricted pending decisions about the future of the station and the appointment of a successor based on such decisions.

Left: **SOUNDING LEAD** used as a weight on a long line to determine water depth.

Right: **BRASS HAMMER HEAD** tools used by the armourer of the ship so as to eliminate the possibility of accidentally making sparks which could ignite the gunpowder.



WATER RESOURCES RESEARCH CENTER

The Water Pollution Studies Program which begun in 1969 on the basis of a contract between the College and the Government of the Virgin Islands through its Division of Environmental Health terminated in the third quarter of 1972. The program undertook detailed analyses of water quality in various bays throughout the Virgin Islands, examination of sewage disposal practices and operating efficiencies of package sewage treatment plants. The 3-year program resulted in a series of 20 Water Pollution Reports.

The Water Resources Research Act of 1964 was amended in 1971 and under the provision of law the Virgin Islands became eligible for federal funding to establish a research center. The Governor of the Virgin Islands early in 1972 designated the College as the local agency responsible for the development of a center.

The Water Resources Research Center was established within the framework of the Institute in November 1973. With the appointment of a director, charged with the responsibility of developing and administering individual projects, a program of research was initiated with its primary mission being the solution of problems in water supply to meet growing demands and the protection of the overall water environment of the territory.

Funding of the Center's activities is provided in part by the appropriations from the local Legislature, and in part by grants from the Office of Water Research and Technology under the provisions of the Water Resources Research Act of 1964, as amended. Section 100 of Title I of the Act provides for annual allotments to the Center for research directed toward water resources problems of the islands. In addition to allotment funds, support is available on a matching grant basis.

Three research projects were initiated in 1974. The first of these is concerned with an analysis of water problems in the U.S. Virgin Islands to identify and evaluate research procedures that must be employed if the more significant problems are to be resolved. Water problems will be identified and considered in the context of the islands and their respective needs and requirements. Potential alternatives for solving or mitigating the more pressing problems will be assessed, and courses of action that may be employed will be evaluated in light of the probability of success of each alternative.

Another project deals with the multiple use of treated wastewater originating with the recently constructed reclamation plant operated by the Government in conjunction with the sewage collection and disposal system of St. Croix. The ob-



The first meeting of the Water Resources Research Committee discuss priorities of water resources research for the islands.

jective of the research is to determine to what degree the use of reclaimed wastewater for irrigation of raw crops and for fish culture as a food source will affect both the quantity and quality of water eventually reaching and recharging underlying ground water sources. This study, as well as the one listed above, will continue in 1975.

A third project undertaken during the year was an environmental impact statement relevant to a proposed highway along the north perimeter of the St. Thomas harbor. This study, concerned primarily with an inventory and assessment of the nature of the biota of the harbor, was prepared for private engineering firms involved in the design of the highway project.

Two proposals written, approved and awaiting staffing: "Effects of Urban Run-off on the Quality of Bays and Estuaries of St. Thomas, U.S. Virgin Islands" and "Pricing Policies, Cost Allocation, & Demand in the Public Water Supply, U.S. Virgin Islands". The latter proposal will be done in collaboration with the Socio-Economic Research Unit.

With difficulties of funding resolved, the Water Resources Research Committee was appointed consisting, in addition to College personnel, of representatives of government agencies concerned and of the public.

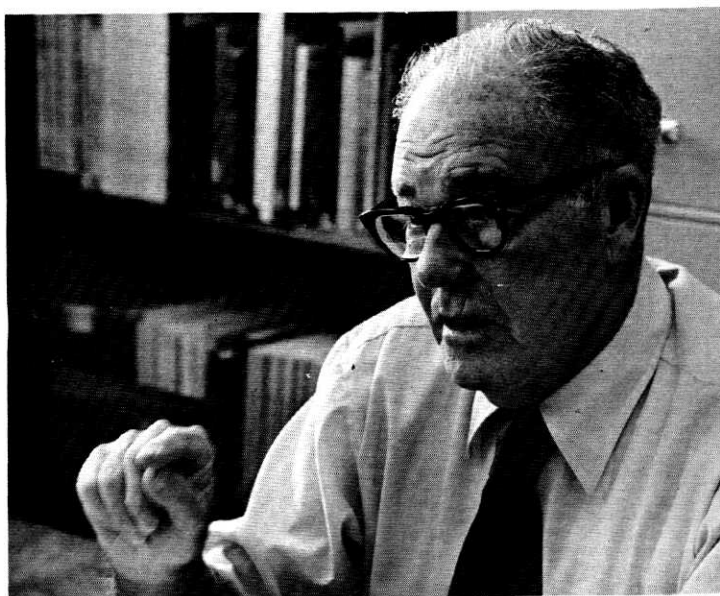
Dr. David M. Grubbs, the first director, completed a one-year contract in November, 1974.

COMMUNITY RESEARCH CENTER

In view of the numerous socio-economic problems which beset the Virgin Islands communities it was most unfortunate that the Institute failed to develop any significant competence in social research. This has led to what can be fairly called a negative reaction on the part of many people to the Institute in general and to its usefulness to the islands in particular. The College, however, recognized that this inadequacy had to be corrected.

The concept of a Community Research Center was presented to the Board of Trustees by the Director towards the end of 1973 as the final stage of the organization project for the current phase of development. It was proposed that initially the Center would comprise two units dealing with socio-economic affairs and education under the supervision of the Director of the Institute, assisted by a faculty member on joint-appointment as coordinator and advisory committee for each Unit. The functions of the Coordinators would be: (a) analyze the recommendations

Dr. David M. Grubbs, the first director of the Water Resources Research Center. Dr. Grubb's one-year appointment was completed November, 1974.



which emerged from the Research Needs Conference and prepare proposals in order of priority; (b) review and advise on proposals submitted to the Institute in the area of specialization; (c) coordinate the research being conducted at the Institute in the area of specialization; (d) liaise with Government agencies and organizations engaged in research work in the area of specialization; (3) conduct "in-house" research, particularly where it may be useful in attracting projects which could be funded by outside sources; (f) undertake such other duties as may be consistent with the objectives of the units.

Socio-Economic Research Unit

Dr. Jerome McElroy, Assistant Professor of Economics, Division of Social Sciences, was named Senior Research Associate and Coordinator of the Socio-Economic Research Unit in November, 1973. Dr. McElroy is at present available to the Institute on a 1/4 time basis.

The main thrust of the Unit is to implement a broad range of micro-state studies and *inter alia* to further operationalize and delineate the initial exploration, extensions and refinement of a tentative theory of Raran Society. This model developed at the Institute is based on a theory of societies which embrace "micro-states" which are a distinct form of "developing" nation in their limited land area, populations and resources. (Raran is an Anglicization of the Yoruba word, "rara", which means literally "dwarfed").

There is a growing consensus that traditional theories of social change are inappropriate tools for the realistic study of Caribbean societies (and other small societies), which derives from the fact that these analyses are predicated on a set of assumed responses developed in and imported from metropolitan situations that do not obtain in diminutive island systems. Several studies undertaken previously at the Institute speak to the hypothesis that small size has exerted a fundamental and decisive influence on the historical gestation of Caribbean societies. It is the position of the Institute that fresh concepts and a new framework seem crucial for incorporating the full implications of small-size-bias on all parameters affecting the socio-economic structure of resource-scare, island-bound communities. The construction of the "Raran" model is an initial step in this direction.

Three separate series of monographs are planned, the first to concentrate on narrow disciplinary analyses of the basic historical, political, social, economic, psycho-cultural, and politico-historical dimensions, and the third to define the regional variants of the basic model throughout the Caribbean basin.

The Unit developed an Ethnic Heritage Studies Program designed to develop an in-depth analysis of the precisely heterogeneous character of Virgin Islands society, including historical patterns and present configurations. The initial stage consists of four separate but related research projects: "Ethnic Relations in the Danish Virgin Islands from Emancipation to Transfer, 1849-1917" (Dr. Isaac Dookhan); "A Structural Analysis of Macro-Social Disequilibrium in the United States Virgin Islands" (Dr. Jerome L. McElroy); "The Influence of Attitudes, Values and Status Interactions on Psycho-Social Perceptions in the U.S. Virgin Islands" (Dr. Maureen Mary McCarthy); "The Establishment and Analysis of Oral History Archives of the U.S. Virgin Islands" (Professor Marilyn F. Krigger).

While the Institute was unfortunate in not being able to obtain federal funding for the 5-year program originally designed (\$75,000 was requested), preliminary

efforts to carry the program forward were initiated with the support of the Consortium on Research Training (CORT) mini-grants. The following research proposals were funded by CORT: "A Survey of Caribbean Heritage on the Island of St. Croix" (Professor Christian L. Juliard) and "The Influence of Attitudes, Values and Status Interactions on Psycho-Social Perceptions in the U.S. Virgin Islands" (Dr. Maureen McCarthy).

An initial examination of the American Virgin Islands political model in terms of its appropriateness to a small, pluralistic island society commenced in the final quarter of 1974. This research is a preliminary effort to test the industrial democratic model of government in the islands, seeking to determine whether an industrial democracy, most successful in rather large, homogeneous societies, fits the varied ethnic configuration of the Virgin Islands. Professor Felix Igwemadu is pursuing this analysis; which, hopefully, will result in the publishing of a monograph.

In the economic area, Dr. McElroy, coordinator of the Unit, prepared for the V.I. Planning Office, an in-depth economic report on the Virgin Islands, which is regarded as a significant contribution to the planning process. The spin-offs from this initial document include several ongoing projects. These include the building up of a data bank on social, economic, and demographic indicators; the development of a new method for estimating Gross National Product in small territories; a theoretical analysis of internal sources of inflation in "raran" systems; and empirical overview of the V.I. tax structure. This last project was presented to the CVI-sponsored Pre-Legislative Conference in December of 1974 and will appear in the proceedings. In addition, a preliminary paper exploring the effects of international tourism on the small island environment will appear in the *Caribbean Educational Bulletin* in March, 1975. The Socio-Economic Research Unit is also cooperating with the Water Resources Research Center on an economical analysis of the long-run water needs for the islands entitled, "Pricing Policies, Cost Allocation, & Demand in the Public Water Supply, U.S. Virgin Islands."

The Socio-Economic Research Committee was appointed, the membership being representative of College and community interest as the other consultative committees. The group is participating in the planning for a conference on the Virgin Islands Economy to be held during the second half of 1975.

Members of the Socio-Economic Research Committee ponder the planning of a Conference on the Virgin Islands Economy.



Education Research Unit

The Education Unit, the organization of which is still incomplete, is predicated on the thesis that if the college of the Virgin Islands--the only institution of higher education--is to assert its leadership in the quest for solutions to Virgin Islands problems, education (the most important single factor in sustaining and perpetuating a democracy) must be an area in which aggressive and concentrated research efforts are made.

Dr. Pearl Varlack, a former Institute researcher and at present Assistant Professor of Education and Chairman, Division of Teacher Education, was appointed a Research Associate on June 1, 1974 on a short-term basis to assist in preparation of a research program designed to achieve the following initial goals:

- (1) an analytic description of existing needs, facilities, programs, etc. in specified areas, the results to be disseminated as widely as necessary in order to increase the potential of agencies and individuals concerned with education to initiate or carry out improved planning and approaches.
- (2) the conduct of fundamental and methodological research on the learning and developmental process of children that are relevant to a Caribbean society. (CRI's working philosophy will be that models, methods and approaches devised for a North American milieu do not necessarily suit the children and institutions of small-island communities; while there might be much that can be transferred in toto from larger and different societies, such transference should follow scientific investigation with a view towards the development of practices, subject matter and approaches that are most suitable for the Virgin Islands within the context of efficiency, utilitarianism and humanism).

Dr. Varlack, who now holds appointment as a Senior Research Fellow, offered to serve on a voluntary basis as interim coordinator of the Unit, but little can be done until staff is recruited. In the meantime, however, the Unit undertook with part-time assistance evaluation of Title III Programs funded at the College for fiscal '73.

Falling under the areas of the Education Unit are the following proposals funded by the Consortium on Research Training (CORT):

"An Investigation of St. Thomas Teachers' Reactions to St. Thomas Dialect Versus Standard English" (Dr. Dirk Messelaar); "The Play and Games of PreSchool and Early Elementary Children in the U.S. Virgin Islands" (Dr. Henry Heald and Dr. Sally Fechtmeyer); "Educational Development in the British Virgin Islands; A Theoretical Analysis" (Dr. Pearl Varlack); and "Historical Resources Pertinent to the V.I. Language Situation" (Dr. Gilbert Sprauve).

EPILOGUE

In the past ten years the story of CRI has been one that is familiar and common to most institutions of its kind—light and shadow, trial and error, success and failure. And even though many have asked whether the benefits have been worth the cost those who have worked with the Institute have in different ways believed in its future.

The present staff of the Institute see the immediate need for another “take-off” in a not-too-different light from the last report which summarized its situation in 1967. In order that the Institute may live up to its potential in the next decade:

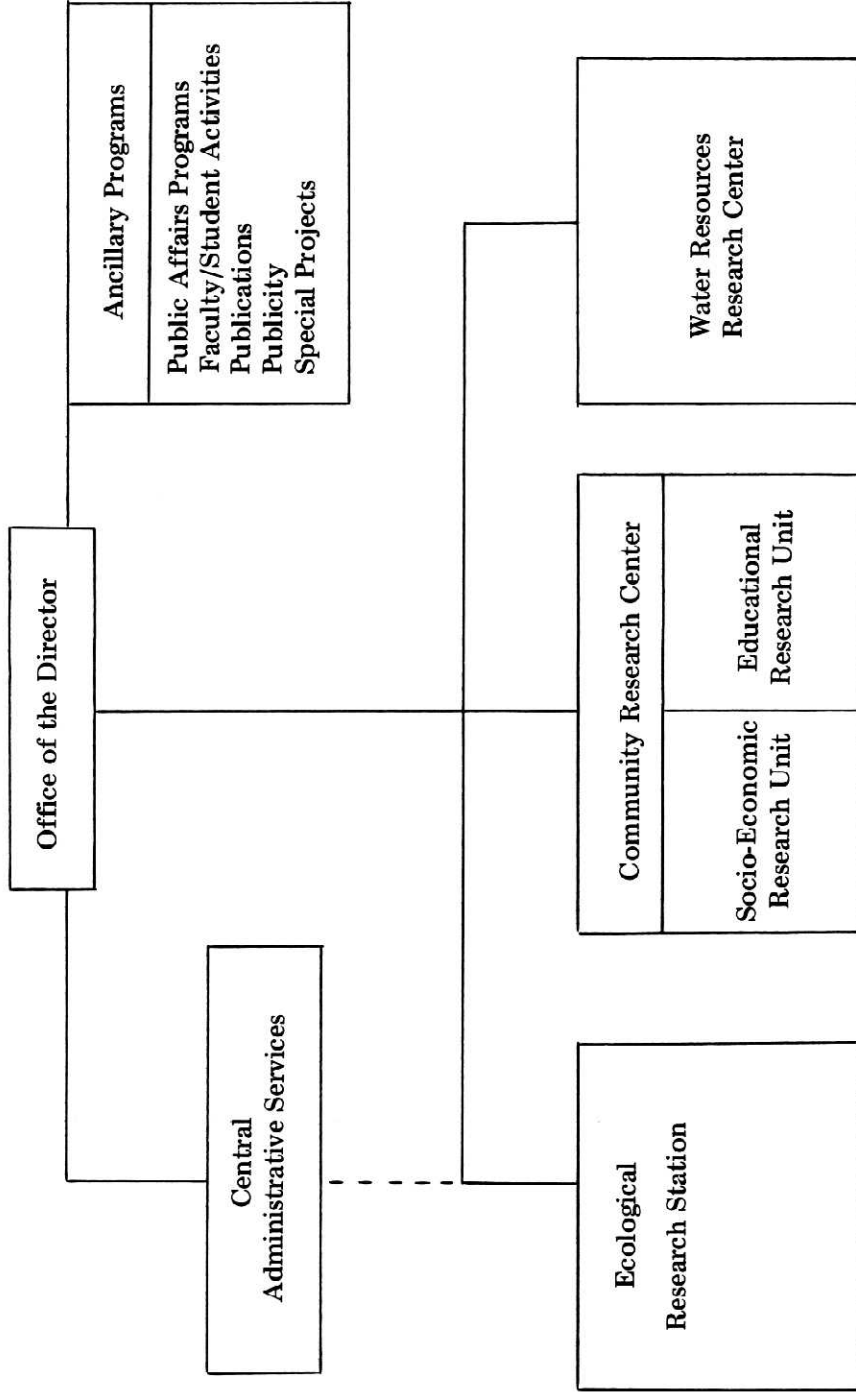
- (1) it must become in fact, the research arm of the College. This will mean that in addition to funded research it must undertake “in-house” research and coordinate the research efforts of the College;
- (ii) research priorities must be determined by College/community cooperation and funding sought to meet the felt needs. In addition to such federal and foundation funding as may become available there is reason to believe that backing for specific needs can be obtained from the Legislature, government agencies, and the private sector;
- (iii) college faculty must be associated with the Institute on a “joint-appointment” basis;
- (iii) students must be involved in Institute activities;
- (v) it must be adequately staffed to perform its functions.

The rationale has perhaps been stated by the Director of the Institute in another connection when he said:

We live in a kind of society (classified among the so-called “developing” countries) which is circumscribed by ecological, socio-economic and psycho-cultural constraints which are likely to make it impossible for it to “catch up” and attain the status of “developed” in the generally accepted meaning of the concept. But these societies seem to have the potential to evolve a distinctive identity by a recognition of their limitations, a re-ordering of their priorities, and a redesigning and restructuring of their institutions. There is evidence to suggest that we often make assumptions about it that are wrong and, therefore, draw wrong conclusions; and it may well be that, for a thorough understanding of what we are and where we are going, new theories and concepts may prove desirable tools for analysis.

The College of the Virgin Islands in its mission of teaching and research, must become a leader in the quest for solutions. We have already demonstrated a recognition of a duty to investigate our own environment, but there remains much to be done before the Institute becomes in reality the research arm of the College and the principal research agency of the Government of the Virgin Islands - goals that it must attain if it is to serve a function beyond the academic divisions.

APPENDIX I
CRI ORGANIZATION CHART



APPENDIX II

CRI STAFF

ADMINISTRATION

Dr. Norwell Harrigan, *Director*
Ms. Beverly Bandler, *Programs Coordinator*
Ms. Marilyn Nibbs, *Office Supervisor/Bkpr.*
Ms. Elena Lynton, *Secretary to the Director*
Ms. Thamina Shalhout, *Projects Assistant*
Ms. Janice Francis, *Secretary*
Mr. Elvin Fahie, *Supply & Services Clerk*

WATER RESOURCES RESEARCH CENTER

Dr. Wesley Nelson, *Director*

ECOLOGICAL RESEARCH STATION

Mr. Llewellyn Sewer, *Resident Manager*
Mr. Oliva Christian, *Laboratory Technican*
Mr. Robert Fleming, *Maintenance/Plant*
Mr. Charles Harrigan, *Maintenance/Grounds*

COMMUNITY RESEARCH CENTER

Socio-Economic Research Unit

Dr. Jerome McElroy, Asst. Professor of
Economics, C.V.I., *Senior Research Assoc.*
Dr. Felix Igwemadu, Asst. Professor of
African Studies, *Research Fellow*
Mr. Christopher Howell, University of
Florida, *Research Affiliate*
Mr. Joseph Caines, Student, CVI,
Research Assistant

Educational Research Unit

Dr. Pearl I. Varlack, Chairman, Div. of
Teacher Education, College of the
Virgin Islands, *Senior Research Asst.*

FORMER STAFF MEMBERS

Dr. John B. Adams, Mr. Alan B. Albright, Mr. O.
Marcus Buchanan, Mr. Robert W. Brody, Dr. A.
E. Dammann, Mr. David I. Grigg, Mr. Mahamad
Hanif, Mr. Jean D. Larsen, Dr. David L. Olsen,
Dr. Edward L. Towle, Mr. Robert van Eepoel.

APPENDIX III

RESEARCH
ADVISORY
COMMITTEES

WATER RESOURCES
RESEARCH COMMITTEE

Mr. Krisen Buros
Dr. James Dougherty
Mr. Thomas Drake
Mr. Pedrito Francois
Mr. Rudolph Galiber
Ms. Helen Gjessing
Dr. Norwell Harrigan, *Chairman*
Mr. Oscar Henry
Mr. Robert Mathes
Dr. Wesley Nelson
Mr. Royal B. Newman
Dr. Fenton Sands

ECOLOGICAL
RESEARCH COMMITTEE

Dr. Aimery Caron
Mr. Cedric Charles
Dr. A.E. Dammann
Mr. Frederick C. Gjessing
Dr. Norwell Harrigan, *Chairman*
Mr. Dennis Huffman
Mr. Euan McFarlane
Dr. Frank Mills
Senator Noble Samuel

SOCIO-ECONOMIC
RESEARCH COMMITTEE

Comm. Gwendolyn Blake
Rev. Canon Julian Clarke
Senator Eric Dawson
Ms. Elizabeth Deutermann
Mr. Richard L. Erb
Mr. Phillip A. Gerard
Dr. Norwell Harrigan, *Chairman*
Mr. Valdemar Hill, Sr.
Mr. I. Nevin Palley
Mr. William Roebuck
Mr. Edward Wilms
Mr. Calvin Wheatley