

**FACULTY OF PURE AND
APPLIED SCIENCES
MONA**

Year ending July 31, 2003



Professor Ronald E. Young, BSc, MSc *UWI*, PhD *St. And.* – Dean

DEAN'S OVERVIEW

INTRODUCTION

In the year 2002-2003 the Faculty of Pure & Applied Sciences concentrated primarily on the reorganisation of its course offerings at both graduate and undergraduate levels, to make them more relevant and more efficient in terms of enrollment. Hopefully, the effects of this will be seen next year, since in the present year, the situation with respect to numbers of undergraduate courses and registration per course has deteriorated (see below). Simultaneously, we sought to carry forward our commitment to be more engaged with the society at large and in particular with the commercial sector in order to develop more functional mechanisms for conversion of the expertise in and the research output of the Faculty, into improved training and more diverse and competitive products and processes in both public and private commercial enterprises.

Undergraduate and/or Graduate level course offerings in the Departments of Geography & Geology, Mathematics & Computer Science (Computer Science Section), Life Sciences and Physics were extensively reorganized, in part in response to the Hamilton Report. The Department of Life Sciences drafted a new MSc degree in *Plant Production and Protection*, and a MSc in *Water Resources Management* was designed for the Department of Geography and Geology by Professor Jasminko Karanjac. Both have been approved for start-up in September 2003. Professor Karanjac also conducted a short course on "*Mathematical Modelling of Ground Water Flow and Fate of Solute Using Visual MODFLOW*" on January 6-11, 2003.

HIGHLIGHTS

Professors Gerald Lalor and Leslie Robinson were appointed Professors Emeritus in the Departments of Chemistry and Mathematics & Computer Science. Dr. Robert Lancashire and Dr. Paul Reese were

promoted to Professorships in Computational Chemistry and in Bio-organic Chemistry respectively, and Drs. Peter Vogel and Dale and Mona Webber to Senior Lectureships in the Department of Life Sciences.

The Faculty lost the highly respected Head of the Department of Mathematics & Computer Science, and Professor in the Physics Department, Professor John Lodenquai, on the 9th January, 2003, after a sudden and brief illness. Dr. Earl Wright a stalwart in the Department of Geography & Geology also died on 14th November, 2002. The Faculty offers condolences to their families and friends.

Resignations were received from the former Head of Mathematics & Computer Science, Professor Johannes Reichgelt, and from Dr. Nikolai Dokuchaev (Mathematics) and Mr. Horace Jones (Actuarial Science) of the same Department. Dr P.V. Devi Prasad (Department of Life Sciences) also resigned his Senior Lectureship in Botany.

Professor Jerrel Wilkens, Professor Emeritus in the Department of Life Sciences, University of Calgary, Canada, was appointed Visiting Professor in the Department of Life Sciences between November, 2002 and January 2003. In addition to his research activities, he held a one day seminar on January 9th for the Graduate Students in the Faculty on “*Strategies for Surviving as a Graduate Student.*” **Professor C.N.R. Rao**, Linus Pauling Research Professor and Honorary President of the Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India, and President of the Third World Academy of Sciences since 1998, visited the Faculty in February and gave two lectures on “*Science in Our Future and National Development*” and on “*Nanotubes and Nanowires.*” A high-level, 7-member **delegation from Anhui Province, China**, headed by the Vice Governor of the Province visited the Faculty to discuss the potential for collaborating in areas such as the development of nutraceuticals and the promotion of Alternative Medicine. The team also met with the Director of JAMPRO and with various Ministers of Government, and liaised with **Mr. Sam Wong Chew Onn**, who accompanied the delegation to the Faculty. In an effort to improve our success rate in applying for research funding, **Dr. David Smith**, Programme Specialist at UNDP and Board Member at the EFJ was invited to address the Faculty Board in May on the issue of Grantsmanship. Members found his presentation enlightening and useful.

At the invitation of the Deputy Principal, **Professor Geoffrey Grimmert**, Head of the Department of Pure Mathematics &

Mathematical Statistics, Cambridge University, visited the Department of Mathematics & Computer Science in March/April and submitted a brief review of the Mathematics Section. He recommended, as a matter of urgency, a number of changes, including strengthening of the Academic leadership of the sub-department through appointment of a Professor and Section Head, reform of curriculum and assessment practices, peer review of lecturers and regular Departmental meetings.

SYMPOSIA & WORKSHOPS

The **Biotechnology Centre** and the **Natural Products Institute**, in collaboration with Blue Cross, staged an International “*Scientific Forum on Caribbean Ethnomedicine and Medicinal Plants*” in Montego Bay on December 6-7, 2002. The **NPI** on April 24-26, 2003 put on a very successful workshop on the “*Utilization and Management of Agricultural and Agro-Industrial Waste*” at the Visitors' Lodge, featuring lectures by Professor Agamuthu Periathamby of the University of Malaya. The Faculty collaborated with the Mona School of Business to host, on February 25, 2003, a symposium on “*Commercializing Science & Technology Development*” also at the Visitors' Lodge, followed by a workshop in the Faculty. Guest speakers included visitors from the Keck Graduate Institute of Life Sciences, Claremont Colleges, the School of Engineering and the Marshall School of Business of the University of South California, and from Global Bridges Consulting, all located in Southern California. The UWI (FPAS) and the University of Technology jointly sponsored the 3rd Annual General Meeting of CARISCIENCE at the Technology Innovation Centre, University of Technology, on October 5-6, 2002, on the theme “*Caribbean Science-Industry Partnership.*” The **Centre for Marine Sciences**, with the support of DFID, put on a multidisciplinary Workshop and Seminar entitled “*Impact and Amelioration of Sediment and Agrochemical Pollution in Caribbean Coastal Waters*” on June 13 and 26, 2003.

The 6th Biennial Research Conference of the Faculty, held on March 18-20, attracted 104 papers (40 oral and 64 posters). Six of the orals and three posters were from other campuses, mainly from Cave Hill. The Best Poster award went to **Miss Debbie Ramsay (Chemistry, Mona)** for her poster entitled: “*Groundwater Nutrient Fluxes to Discovery Bay, Jamaica.*” The award for Best Oral Presentation went to **Miss Anginette Murray (Life Sciences, Mona)** for her presentation “*Fishing activities and fishable resources exploited by Whitehouse fishers, Westmoreland.*” The **Department of Geography & Geology** used the occasion to unveil the reconstructed fossil skeleton of the 50 million year old sea cow *Pezosiren portelli*

discovered in 1994 near seven rivers, Montego Bay by Roger Portelli of the Florida Museum of Natural History. This ancestral species, unlike the modern sea cow, had legs.

Dr. Dwight Robinson, Department of Life Sciences, ran, in December/January, a series of workshops on “*Scouting Techniques for Pests*” for the Jamaica Agricultural Development Foundation, to educate farmers who were experiencing difficulties in identifying pests. The **Better Process Control School**, Department of Chemistry, under the direction of **Dr. Donna Minott** with the collaboration of the Bureau of Standards, ran its annual course on January 6-10, 2003 for 30 participants from food processing companies and regulatory agencies across the island. On January 7-10, **Dr. Novelette Sadler-McKnight** organized, in response to requests from schools doing CAPE Chemistry, a successful workshop on “*Chromatographic Techniques*” and “*Spectroscopic Methods of Analysis.*” The workshop was attended by 260 students and 106 teachers from across the island. She also ran a workshop for teachers in collaboration with the Ministry of Education, Youth and Culture on July 16-17.

OUTREACH

The Faculty participated in the Department of Management Studies conference on the “*Role of Government in Tourism*” held at the Visitors’ Lodge on the 25-28 September, 2002; in the Proclamation Ceremony for the launch of Science & Technology Month at King's House on November 1, 2002; in the Department of Management Studies/Mona School of Business Colloquium on “*Ethics in Caribbean Business – Philosophical Social and Political Perspectives*” on February 22-23, 2003; and in the Medical Association of Jamaica “*Wellness Symposium 2003*” at the Jamaica Pegasus Hotel on April 4-6, 2003. Of the 38 oral presentations at the Scientific Research Council's 16th Annual National Conference on Science & Technology, on the theme “*Science & Technology for Economic Development: Towards Health, Wealth and Knowledge*” held at the Knutsford Court Hotel on November 28-30, 2002, 11 originated from the Faculty of Pure & Applied Science and 17 from the UWI in general. The Faculty also won the Best Display award at the Northern Caribbean University's conference on “*Inventors, Researchers and Entrepreneurs*” on April 5-8, 2003.

PUBLICATIONS

Compared with 2001/2002, output rose in all forms of publication. Refereed publications were up 48% from 66, with the per capita output

rising to 0.96 compared with 0.69 last year. Non-refereed and conference presentations together also rose by 45% from 104 last year to 151. All Departments contributed to this increase in productivity, but the Department of Geography & Geology must be commended for having attained the average of 2 refereed papers per academic staff member, and for having produced two books as well.

Department	No. Acad. staff	Refereed Publicatons	Non-Refereed Publications	Conference Presentations
Biotechnology Centre	5	5	1	25
Chemistry	23	28	6	13
Geography & Geology	12	24 + 2 books	10	42
Life Sciences	19	9	8	25
Math & Comp Science	21	15	–	9
Physics	14	7	–	16
CMS	3	6	4	14
EM Unit	2	1	–	4
NPI/MIAS	3	1	–	3
TOTAL:	102	98	29	151

It might well be noted that this department also puts out two peer-reviewed, independently self-financing journals, **Caribbean Geography** (two issues per year) and *Caribbean Journal of Earth Science* (one issue per year).

UNDERGRADUATE

In 2002/2003 the Faculty registered a total of 1280 students, an increase of 4.6% over the intake in 2001/2002, when 1224 students were on the register (data from the Student Records System). The Campus overall showed a 7.5% increase in total student number. Of this number, 621 were newly admitted students, an increase of 19.5% over the intake of new students (512) in 2001/2002. The Campus overall showed a 9.9% increase in intake of new students (4365 in 2002/03 vs 3971 in 2001/02).

The Table below shows the number of individual courses and total registrations in these courses. It indicates that the number of courses offered in all departments reporting had remained constant or increased

(Physics), despite the push to reduce the number of courses offered. There were in general, no meaningful changes in the mean number of students per course.

Department	No. of Courses	Mean number /Course	Course/Staff Member
Chemistry	24	60.2	1.0
Geography/Geology:			
Geog	16	43.6	2.7
Geol	17	17.9	2.8
Life Sciences	38	43.9	2.0
Math & Comp Sci:			
CSci	15	86.5	1.7
Math	28	59.1	2.3
Physics	25	33.6	1.8
TOTAL:	163	48.5	1.6

The situation in Geology, however, continues to be of great concern. This year the sub-department offered 17 instead of 18 courses, but the total registration fell from 420 to 305, so that mean number of students per class fell from 23 to 18. The Department will have to address this dyseconomical state of its teaching effort.

Level of Degree	2000/2001		2001/2002		2002/2003	
	N	%	N	%	N	%
First	22	7.2	32	10.9	27	9.4
Upper Second	80	26.0	92	31.4	87	30.4
Lower Second	77	25.1	88	30.1	90	31.5
Pass	73	23.8	32	10.9	37	12.6
Fail	55	17.9	49	16.7	46	16.1
Total Sitting	307	100.0	293	100.0	287	100.0
Total Registered	1208		1224		1280	

Failure rate in the final examinations seems to be holding at about 16%, while the percentage of First Class Honours appears to have steadied at around the 10% mark, a level which seems quite acceptable.

GRADUATE

In 2002/2003 the Faculty registered a total of 324 graduate students in various programmes, compared with 306 in 2001/2002, an increase of about 6%. It is disconcerting to note that the MSc registrations have

fallen, but the marked increase in PhD registrations is noteworthy. There was very little change in the number of MSc students graduating, but the combined number of MPhil and PhD graduating students increased.

	REGISTERED				GRADUATING			
	1999	2000	2001	2002	1999	2000	2001	2002
MSc	86	96	86	82	24	21	21	23
MPhil	157	168	178	181	6	10	12	14
PhD	40	38	42	61	9	3	5	10
Total:	283	302	306	324	39	34	38	47

This year we include for the first time in our report, statistics on the registration in Graduate Courses. The Geology sub-department, in spite of the relatively low undergraduate enrollment and teaching loads, continues to resist the introduction of taught Graduate level courses. In most other disciplines, the engagement in Graduate teaching is relatively low (mean Courses/Staff member = 0.73) except in the case of Computer Science, in which there were 2.4 courses per staff member with a mean enrollment of 36 students per course.

Department	No. of Courses	Mean No. /Course	Courses/Staff Member	
Chemistry	7	8.4	0.3†	1.3*
Geography/Geology:				
Geog	5	23.4	0.8	3.5
Geol	0	n/a	n/a	2.8
Life Sciences	9	5.2	0.5	2.5
Math & Comp Sci:				
CSci	22	36.3	2.4	4.1
Math	9	1.6	0.75	3.1
Physics	4	12	0.75	2.1
TOTAL:	56	18.6	0.73	2.3

†This column indicates mean number of courses for graduate level only

*This column indicates mean number of courses including both graduate and undergraduate levels

The Computer Science sub-department clearly has focused on graduate training. They offer a total of 22 graduate courses over Semesters I & II, more than the number offered in the undergraduate programme. It is of concern, however, that although the mean registration per graduate course is high, 9 of the 22 courses had less than 10 students and 7 had less than 5 students registered. Clearly the reason for this odd distribution of effort needs to be determined, and the course offerings have to be

rationalized, particularly in the face of constant complaints by staff members of excessive teaching loads.

GRANTS

Grants (and other earnings) reported to have been brought in from external sources increased considerably by 182% to J\$79,853,845 from last year's J\$ equivalent of \$29,350,880. The total number of external grants increased from 14 to 46 (3.3x).

Department	Internal* (J\$eqlt) Grants	No. Grants	External (J\$ eqlt) Grants	No.
Chemistry	\$1,393,440	5	\$47,217,495	17
Geography & Geology	\$4,823,273	10	\$16,230,565	18
Life Sciences	\$5,478,048	3	\$7,581,265	6
Math & Computer Science	–	–	–	–
Physics	–	–	\$800,000	2
Biochem/Biotechnology	\$2,033,000	2	\$8,024,520	1
Centre Marine Sciences	–	–	\$3,000,000	2
TOTAL:	\$13,727,761.00	20	\$82,853,845.00	46

*Includes financial inputs from non-grant sources as well. Commission @ US\$ = J\$53.5

Internal grants (plus other funding sources) reported, also rose considerably from 9 to 20, with the total sum obtained increasing from \$3,276,180 to \$13,727,761, an increase of over 4 times. The Departments that contributed to this marked improvement in performance have to be commended. This increase is likely to be largely due to increased and more systematic reporting, but may also reflect an increase in funds being made available to support research.

CONCLUSION

The Faculty has enjoyed a quite productive year, although there are many issues that still need addressing. Both academic output and monetary intake from grants and other sources of revenue, have increased markedly. To the extent that the increase in revenue is due to an actual rise in intake rather than simply an increase in reportage, this is commendable; but even if the rise is due only to better reportage, this is still a good sign. On the down side, it remains clear that our taught Masters programmes are not, in general, attracting sufficient numbers of students, although some do have satisfactory registrations. We still need to focus at all levels, on weeding out poorly subscribed programmes/courses wherever

possible, and introducing ones that will be more sought-after. Departments also need to pay great attention to rationalizing the balance between teaching effort in the Graduate and Undergraduate programmes. We must be particularly careful that persons, in order to reap financial rewards, do not place undue emphasis on teaching in non-UGC courses which overall are not economical, whilst jeopardizing the undergraduate teaching and the success of the overall academic enterprise.

DEPARTMENT OF CHEMISTRY

Professor Ishenkumba A. Kahwa, BSc (Hons), MSc *Dar es Salaam*,
DPhil *Louisiana State* – Head of Department

WORK OF THE DEPARTMENT

The academic year 2002/2003 started out with **Professor Ishenkumba Kahwa** assuming office as the new Head of Department. He succeeded Professor Tara Dasgupta who served in that capacity for ten years and who was duly recognized for his outstanding service to the Department in an appreciation ceremony held on October 5, 2002.

Professor Kahwa immediately set out and conducted a series of meetings with the different categories of staff and shared his intention of how and in what direction he intended to lead the Department. This resulted in the assignment of several members of staff to specific leadership roles.

The Head initiated the first Department Retreat which was held at the Renaissance Jamaica Grande Resort, Ocho Rios from November 29-December 1, 2002. All except two members of the academic staff attended. The objective of the Retreat was to examine, assess and formulate policies which would address the Department's Strategic Mission and articulate it to that of the UWI.

One of the main areas of focus for the new head was the broadening and deepening of the scope for postgraduate research programmes for students, as well as to entrench the recognition of and emphasis on the centrality of research and publication in academia.

In an effort to enhance this development process, the Department hosted a number of Public Lectures, Seminars and Workshops which sought to develop a basic framework for achieving higher research and publication output in high impact journals. A total of twenty seven such

events were held for the year which saw several international, external and local presenters.

Two such Public Lectures were held on February 26 & 27, 2003 in the Department by **Prof. CNR Rao**. The Department in collaboration with the Faculty of Pure and Applied Sciences and ICENS and with assistance from the Principal, Graduate Studies and Research and The National Foundation for the Development of Science and Technology hosted this Distinguished Scientist, Professor CNR Rao, FRS, President of the Third World Academy of Sciences and Linus Pauling Research Professor, CSIR Centre of Excellence in Chemistry, Bangalore, India.

This event was followed shortly after with a visit by Professor Malcolm Chisholm of the University of Ohio, on March 19-23, 2003, who is the Department's Inorganic External Examiner. In addition to carrying out his duties as an External Examiner, Professor Chisholm facilitated a successful workshop on modern research agendas, grants and publishing (in high impact journals).

The Department in collaboration with Bruker BioSpin, Germany and Bruker Optics, USA conducted a Workshop on Application of Nuclear Magnetic Resonance, Infra-red and Near Infra-red Spectroscopy in Product Development and Research. The workshop focused on the use of state of the art instrumentation and techniques to solve chemical problems and increase output in organizations.

With the acquisition of new state of the art instruments in the Department, the need to have qualified personnel to operate them in order to maximize their use, a decision was taken to offer in-house training to the Laboratory Technicians with the different instruments. Hence, a series of training sessions were conducted on Thursday afternoons from October 31 to December 19, 2002. The training covered a number of instruments from the relatively simple to the most sophisticated equipment in the Department. In addition to these seminars, three graduate students and a Scientific Officer attended a Nuclear Magnetic Resonance Spectroscopy (NMR) Workshop at the Department of Biological and Chemical Sciences, UWI, Cave Hill from May 19-23, 2003. The facilitator at the Workshop was Professor William F. Reynolds from the Department of Chemistry, University of Toronto, Canada who is a known expert in the field of NMR Spectroscopy.

The **Better Process Control School** (BPCS) was held in the Department from January 6-10, 2003 and was a major success; a record number of participants attended. The Department, which has been approved as the sole certifying BPCS institution in the region for some time now, was this year instrumental in having the Bureau of Standards (Jamaica) recommended for provision of the required independent monitoring service for future Better Process Control Schools instead of the US Food and Drug Administration (FDA).

The outreach aspect of the Department also played its part in its offerings to the wider chemical society. A team of seven lecturers from the Department headed by **Dr. Novlette Sadler-McKnight** conducted a series of workshops for High School teachers and students who were preparing for Chemistry examinations at the CAPE level. Dr. McKnight was also instrumental in getting the Ministry of Education to join in partnership for one of the workshops. One workshop series took place January 6-10, 2003 while another was held July 16-17, 2003; both workshops were considered successful as they broadened and improved the delivery of chemical education in High Schools.

The overall performance of the Department for the year is encouraging based on the number of outstanding achievements. Among the staff were the promotions of two Senior Lecturers to the level of Professors, the appointment of a senior staff member to lead a new International Union of Pure and Applied Chemistry taskforce, the elevation to the highest rank accorded to accomplished members of the Royal Society of Chemistry the "Fellow of the Royal Society of Chemistry" (FRSC). The Head of the Department was appointed member of a cross-faculty Task Force to identify the challenges facing the UWI, Mona Campus and to make recommendations regarding how the campus should respond to the challenges so identified.

A Chemistry graduate student (**Dr. Danielle Aquart**) won the prestigious award for the "The Most Outstanding Thesis for 2001-2002:" while another (Ms. Keisha Lambert) received a Travel Grant from the Commonwealth Science Council to attend the Conference of the Institute of Food Technology in the USA. Four members of staff were recipients of Research Day 2003 Awards for Best Publication (**Dr. Yvette Jackson**), Distinguished Researcher (**Prof. Paul Reese**), The Most Successfully Commercialized Research Project (**Prof. Robert Lancashire**) and Project Attracting the Most Research Funds (**Dr. Jose Jackson**).

The Department ended the academic year 2002/2003 with five Doctor of Philosophy (PhD) and four Masters of Philosophy (MPhil) candidates meeting requirements for graduation. Our total undergraduate student enrolment (1398 in 24 courses) was a bit lower than in 2001/2002 (1462 for 24 courses) but postgraduate intake rose from 9 to 12 research students. Our publications (28) were up by 17% over 2001 while about 17 grants/earning activities secured J\$48.6 million; i.e. the Department earned 43 cents on each dollar it got from UWI funds. Our staff continued to be active on both the local and international scenes – five of them performed peer review services for national, regional and international journals and served on editorial boards; ten served on national and civic society committees and boards; one is the Vice-President of the Mona Non-Academic Staff Association (MONASA) while another is the District Grand Master of the Jamaica District Grand Lodge.

STUDENT ENROLMENT

LEVEL	2000/2001	2001/2002	2002/2003
Preliminary	135	148	314
Introductory	203	203	471
Advanced	822	775	766

STAFF MATTERS

Dr. Danielle Aquart was appointed Assistant Lecturer in Inorganic Chemistry.

Ms. Keisha Lambert was appointed Teaching Assistant in Food Chemistry.

Mr. Glenroy Martin was appointed Teaching Assistant in Organic Chemistry.

Dr. Dwight Ramdon was appointed Assistant Lecturer in Inorganic Chemistry.

Dr. Marvadeen Singh-Wilmot was appointed Assistant Lecturer in Inorganic Chemistry.

Mr. Norman Townsend was appointed Teaching Assistant in Organic Chemistry.

Dr. Robert Lancashire and **Dr. Paul Reese** were promoted to Professors.

Dr. Yvette Jackson was elevated to Fellow of the Royal Society of Chemistry.

Professor Tara Dasgupta was on one year Sabbatical Leave.

Dr. Anthony Greenaway was granted Research Study Leave for another year.

STUDENT MATTERS

Undergraduate Awards

A total of seven undergraduate students from the Department received awards ranging from \$10,000 to \$60,000 for their academic achievements in Chemistry.

Postgraduate

Five (5) graduate students completed their Doctor of Philosophy while another four (4) completed their Master of Philosophy degrees.

DOCTOR OF PHILOSOPHY

1. CHRISTIAN, Omar
2. LAMM, Andrew
3. MARTIN, Glenroy
4. SINGH-WILMOT, Marvadeen
5. TOWNSEND, Norman

MASTER OF PHILOSOPHY

1. BLAKE, Orane
2. BURKE, Sharon
3. GORDON, Junior Noel
4. LAMBERT-CHRISTIAN, Keisha

RESEARCH GRANTS

Dr. Anthony Greenaway and **Dr. Michael Coley** received grants of J\$2,304,500 from West Indies Alumina Company (WINDALCO) to fund a research project entitled: *“Boehmite in Bauxite, characterization, quantification and its effects on extraction of alumina from Bauxite”*.

Professor Tara Dasgupta signed a new contract with the Jamaica Racing Commission to the tune of \$25M.

Dr. Henry Ellis received US\$2,000 from Research and Publications

Dr. Yvette Jackson received US\$2,000.00 from Research and Publications

Professor Helen Jacobs with **Dr. J. Jackson** received US\$3,265.00 for a New Initiative Project.

Dr. Sandra Jarrett received US\$12,968.00.

Prof. I. A. Kahwa received grants for:

1. National Hazardous Materials and Waste Inventory and Management Policy Options – Environmental Foundation of Jamaica (EFJ) J\$5.427M
2. Development of Occupational and Environmental Safety and Health Courses at UWI - EFJ \$1.392M (with Mr. Milton Pinnock (Community Health and Psychiatry) and Prof. Neville Ying (Labour Studies).
3. Research and Publications US\$4,991
4. Research grants proposals and publishing Departmental workshop (CARISCIENCE) – US\$500

Prof. R.J. Lancashire received US\$20,000 from MDL Information Systems, Inc to support their joint project on spectroscopic software.

Dr. Donna Minott received a grant of US\$1,950 for research student from Research and Publications.

Dr Willard Pinnock received US\$2,000.00 for his research student from Research and Publications.

Professor Paul Reese and **Dr. Roy Porter** received US\$18,500.00 from WINCORP for research on the isolation of anti-microbial compounds from Jamaican plants.

Professor Paul Reese received J\$100,000 for student research from the Board for Graduate Studies.

Dr. Marvadeen Singh-Wilmot received a grant of US\$1,500 from CARISCIENCE.

RESEARCH IN PROGRESS

Coley, M.

- Characterization and the processability of bauxite to determine the impact of boehmite content on gibbsite extraction efficiency.

Dasgupta, T. P.

- Mechanisms of electron transfer and substitution reactions in inorganic complexes.
- Syntheses, characterization and reactivity of nitric oxide releasing compounds and their vasodilating properties.
- Syntheses, structure, reactivity and insulin mimicking properties of vanadium (IV/V) complexes.
- Dynamics of pesticide degradation and analysis of ultratrace pesticides and their metabolites.

Ellis, H. A.

- Thermotropic and lyotropic phase transitions in metal soaps
- Metal ion adsorption on water soluble polymers

Greenaway, A. M.

- Nutrient pollution in Jamaican coastal waters.
- Nitrogen and Phosphorus concentrations in ground and surface waters and their fluxes to the coastal zone.
- Alumina extraction efficiencies in the Bayer process (the process to extract alumina from bauxites).

Jackson, Y.

- Synthesis and chemistry of some pharmacologically active heterocyclic compounds and their analogues.

Jacobs, H.

- Natural products from selected species of endemic Jamaican flora.

Jarrett, S.

- The synthesis of 2-amino-4-vinylthiazoles, a route to benzothiazoles and other Fused Ring systems

Kahwa, I.

- Syntheses, structure and luminescence spectroscopy of rare earth nanoclusters, their interactions with quantum dots, potential applications in diagnostic and therapeutic biomedicine and catalysis.
- Hazardous waste and materials Jamaica/Caribbean: Public, occupational and environmental health impact and policy lessons.
- Science-technology-innovation policies.

Lancashire, R.J.

- Chemical applications of the Internet.
- The JCAMP-DX spectroscopic data format and distribution of scientific data via the WWW.

Maragh, P.

- Electron transfer reactions with Di-nuclear Iron (III) cyano-bridged complex with sulfite, ascorbic acid and other reducing agents
- Synthesis and structure determination of sulfite-Chromium (III) macrocyclic complexes.

Minott, D.

- Changes of hypoglycin content in ackee during maturation and with different ackee varieties.
- Comparison of the nutritional and anti-nutritional components of several transgenic papaya lines with a non-transgenic variety.
- Chemistry of the water from different varieties of coconuts grown in Jamaica and determination of the factors affecting the

production of pigments in processed coconut water.

Mulder, W.

- Phase transitions in monolayers at electrified interfaces.
- Theory of electro-wetting phenomena.
- Structural and thermodynamic properties of electronically excited molecules in solution.
- Electrochemical oscillations at modified electrodes.

Pinnock, W.R.

- Development and use of passive monitors for Air Pollution Monitoring in Jamaica and developing countries.
- Producing useful materials from Red Mud. In an advanced stage is the investigation of effects of adding red mud as pozzalana to standard concrete.
- Developing a standard for radioactivity in Building Materials based on measured and modelled doses in actual building (model house)

Porter, R.

- Investigation, characterisation and identification of secondary metabolites from several folklore medicinal plants.
- Extraction and characterisation of constituents of essential oils from local aromatic plants.

Ramdon, D.

- Use of electrochemistry equipment to study paraquat redox activity.

Reese, P.

- Medicinal Plants. Plants, mainly from the Labiatae, Scrophulariaceae and Capparaceae families, are being examined to isolate and characterise the major natural products.
- Microbial transformations. Natural products of agricultural and pharmaceutical interest are structurally modified by selected strains of fungi in an effort to produce a range of new analogues with enhanced bioactivity.

Singh-Wilmot, M.

- Lanthanide-based dendritic nanodevices
- Collaborative work on single crystal and powder X-ray diffraction

PAPERS PRESENTED

Dr. Danielle Aquart

- “Mechanism of nitric oxide release from the potent nitrovasodilator S-nitrosocaptopril: redox and transnitrosation reactions”. (poster) 224th American Chemical Society National Meeting and Exposition in Boston MA.

Dr. Anthony Greenaway

- “Nutrient Dynamics in Tropical Marine Environments”. UNEP Workshop on Nutrient Removal Technologies in Trinidad and Tobago

Dr. I. Hassan

- “Magnesioferrite: variation of cation ordering with pressure and temperature”. COMPRESS Meeting held in Santa Cruz, California
- “Thermal Analyses of Magnesioferrite”. AGU Fall Meeting, San Francisco, California.

Dr. Yvette Jackson

- “Approaches to the Synthesis of Analogues of Shermilamine B”. Royal Society of Chemistry Symposium on Heterocyclic Synthesis, Grasmere, Lake District, UK.

Professor I. Kahwa

- “Implications of Science R&D and Occupational and Environmental Safety and Health Issues to Decent Work”. First Caribbean Labour Conference, UWI Mona

- “Ethical Dynamics in the Physical Sciences”. 3rd Annual Research Colloquium of the Department of Management Studies, UWI
- “Publish or Perish: Quantity vs Quality”. University of Technology Research Grants and Publishing Workshop
- “Asbestos Pollution: Lessons and Perspectives from Jamaica”. Jamaica Institute for Environmental Professionals

Professor R. Lancashire

- “The development of interactive pages using MDL CHIME, JAVA and JavaScript” The Department of Chemistry, University of the South Pacific, Fiji, The Department of Chemistry, University of Western Australia, The Department of Chemistry, University of Sydney, Australia

Dr. W. Mulder

- “The possibility of spontaneous electrochemical oscillations at wired enzyme electrodes.” Seminar at the Departamento de Química Física, University of Sevilla, Spain

PUBLICATIONS

Refereed

- * **M. Bakir**, ‘*fac*-Tricarbonyl[hydroxybis(2-pyridyl)-methanolato- k^3N,O,N]rhenium(I)’, *Acta Crystallographica* 2002, C58, m74.
- * **M. Bakir**, ‘Synthesis, Characterization and Structural Studies on the First Rhenium Complex with Di(2-pyridyl)Ketone 2,4-Dinitrophenylhydrazone (dpkdnph), *fac*-Re(CO)₃(dpkdnph)Cl’. *European Journal of Inorganic Chemistry* 2002, 481.
- * **M. Bakir** and Colin Gyles, ‘Optosensing properties of *fac*-Re(CO)₃ (dpknaph)Cl (dpknph. = di-2-pyridyl ketone p-nitrophenyl hydrazone)’. *Talanta*, 2002, 56, 1117.
- * **M. Bakir** and O. Brown, “Molecular structure and optosensing behaviour of di-2-pyridyl ketone benzoylhydrazone in non-aqueous solvents” *Journal of Molecular Structure* 2002, 609, 129.

- * **M. Bakir**, ‘Optical, electrochemical and structural studies on the first rhenium compound of di-2-pyridylketone-phenylhydrazone (dpkphh), fac-Re(CO)₃(dphphh)Cl’, *Inorganica Chimica Acta* 2002, 332, 1.
- * **M. Bakir** and Orville Green, ‘The structure of di-2-pyridylketone p-aminobenzoylhydrazone water solvate (dpkabz.H₂O)’. *Acta Crystallographica* 2002, C58, 0263.
- * **M. Bakir** and O. Brown, ‘X-ray crystallographic and optosensing studies of di-2-pyridyl ketone p-nitrophenylhydrazone (dpknph) in dimethylsulfoxide (DMSO)’, *Journal of Molecular Structure* 2002, 641, 183.
- * **M. Bakir** and C. Gyles, ‘Structural, Electrochemical and Optical Properties of dpkfah’. *Journal of Molecular Structure* 2003, 649, 133.
- * **M. Bakir, I. Hassan** and O. Green, ‘Manganese Carbonyl Compounds of N,N-bidentate di-2-pyridylketone (dpk) and N,O,N-tridentate hydroxybis(2-pyridyl) methanolato (dpkO, OH)’. *Journal of Molecular Structure* 2003, 657, 75.
- * **T. P. Dasgupta** and J. N. Smith, “Reactions of S-nitrosothiols with L-Ascorbic Acid in Aqueous Solution”. *Methods in Enzymology* 2002, 359, 219.
- * **T. P. Dasgupta**, D. Ragoobirsingh and D. McGrowder. ‘The effects of S-nitrosoglutathione in insulin. Receptor Behaviour on Erythrocytes in an Animal Model’. *Diabetologica Croatica* 2003, 32-2, 65.
- * **H. A. Ellis**, N.A. White, **I. Hassan** and R. Ahmad, A room temperature structure of anhydrous lead (II) decanoate. *Journal of Molecular Structure* 2002, 642, 71.
- * **I. Hassan**, S.M. Antao and A. A. Hersi, ‘XRD, TEM, DTA, and DSC studies of the satellite reflections in nepheline’. *Canadian Mineralogist* 2003, 41, 759.
- * S.M. Antao, M. J. Duane, and **I. Hassan**, ‘DTA, TG, and XRD studies of sturmanite and ettringite’ *Canadian Mineralogist* 2002, 40, 1403.

- * S.M. Antao and **I. Hassan**, 'Thermal behaviour of scapolite $Me_{79.6}$ and $Me_{33.3}$ ' *Canadian Mineralogist* 2002, 40, 1395.
- * S. M. Antao and **I. Hassan**, 'Thermal analyses of sodalite, tugtupite, danalite, and helvite'. *Canadian Mineralogist* 2002, 40, 163.
- * **Y. A. Jackson**, and Karla-Sue Marriott, 'A Novel Photochemical Route to Dibenzo-naphthyrones'. *Heterocycles* 2002, 57(10), 1897.
- * **Y.A. Jackson**, D. Rajagopal, J. Bendolph, M. Guillory, M.V. Lakshmikantham, J. Yang and M.P. Cava, 'Thiophene Isosteres of 9, 10-Dithioanthraquinone', *Organic Letters* 2003, 5(11), 1883.
- * Y. Morimoto, M. Takaishi, T. Iwai, T. Kinoshita and **H. Jacobs**, 'Complete assignment of the stereostructure of a new squalene-derived epoxy tri-THF diol from *Spathelia glabrescens* by total synthesis'. *Tetrahedron Letters* 2002, 43, 5849.
- * N. P. Seeram, L. S. Francis, O. L. Needham, **H. Jacobs**, S. McLean and W. F. Reynolds, 'Drimane and bisabolane sesquiterpenoids from *Cinnamodendron corticosum* (Canellaceae)'. *Biochemical Systematics and Ecology* 2002, 31, 637.
- * S. J. Burke, **H. Jacobs**, S. McLean and W. F. Reynolds, 'Structural and spectral assignment by 2D NMR of a new prenylated benzopyrancarboxylic acid and structural reassignment of a related compound'. *Magnetic Resonance in Chemistry* 2003, 41, 145.
- * **H. Jacobs**, 'Comparative phytochemistry of *Picramnia* and *Alvaradoa*, genera of the newly established family Picramniaceae'. *Biochemical Systematics and Ecology* 2003, 31 (7), 773.
- * L. V. Harris and **I. A. Kahwa (as Guest Editors)** 'Asbestos: Old Foe in 21st Century Developing Countries' *Journal of the Total Environment* 2003, 307, 1.
- * M. K. Thompson, A. J. Lough, A. J. P. White, D. J. Williams and **I. A. Kahwa** 'Formation of two diverse classes of poly(amino-

alkoxide) chelates and their mononuclear and polynuclear lanthanide(III) complexes'. *Inorganic Chemistry* 2003, 42, 4828.

- * R. C. Howell, S. H. Edwards, A. S. Gajadhar-Plummer, **I. A. Kahwa**, G. L. McPherson, J. T. Mague, A. J. P. White and D. J. Williams. 'Phthalimides: Supramolecular Interactions in Crystals, Hypersensitive Solution ¹H NMR Dynamics and energy transfer to europium(III) and terbium(III) states'. *Molecules* 2003, 8, 565.
- * R. U. Richards-Johnson, A. J. Lough and **I. A. Kahwa** '[Aqua(N, N', N'', N''')-tetrakis(2-hydroxyethyl)-1,4,7,10-tetrazacyclododecane]praseodymium(III) hexanitratopraseodymate(III) dehydrate' *Acta Crystallographica* 2003, E59, 742.
- * **W. H. Mulder** and C. Párkányi, 'Theory of the salt effect on solvatochromic shifts and its potential application to the determination of ground-state and excited-state dipole moments'. *Journal of Physical Chemistry A* 2002, 106, 11932.
- * **W.H. Mulder**, 'The use of size distributions of circular domains in Langmuir monolayers for determining physical parameters of surfactants'. *Journal of Colloid and Interface Science* 2003, 264, 558.

Non-Refereed

- * **M. Coley**, *Introductory Chemistry 1: Part IV, Analytical Chemistry*: The University of the West Indies Distance Education Centre (UWIDEC, 2002)
- * **H.E. Ellis**, *Molecular Structure, Physical Chemistry*, The University of the West Indies Distance Education Centre (UWIDEC, 2002)
- * **S. Jarrett** and **R. Porter**, *Introductory Chemistry 1: Part III, Organic Chemistry*; The University of the West Indies, Distance Education Centre (UWIDEC, 2002)
- * **R. J. Lancashire**, Editor of the Proceedings of the Sixth Conference, Faculty of Pure and Applied Sciences, University of the West Indies, Mona, 18-20 March, 2003, ISBN 976-41-0087-2.

- * **P. Maragh**, *Introductory Chemistry 1: Part I, Physical Chemistry, Unit 1: Atomic Structure*, The University of the West Indies Distance Education Centre (UWIDEC, 2002).

PUBLIC SERVICE

Professor Tara Dasgupta

- Chief Editor, *Jamaican Journal of Science and Technology*
- Member, Agricultural Support Service Committee
- Director, Mona Institute of Applied Sciences
- Executive Member, Natural Product Institute
- Editorial Board, *Inorganic Reaction Mechanisms*
- Chairman, Electronics Unit Advisory Committee
- Head, Jamaica Racing Commission Laboratory and Member of Equine Drug Testing Committee

Dr. A. Greenaway

- Member, National Ozone Commission
- Associate, Centre for Marine Sciences

Dr. Y. Jackson

- Foreign Research Mentor, Minority International Research Training Programme, Barry University, Florida
- Member, Board of Governors, Hampton High School, St. Elizabeth
- Member, Board of Governors – Institute for Theological Leadership and Development (ITLD).

Professor I. A. Kahwa

- Member, Asbestos Task Force, National Environment and Planning Agency
- Member, Board of Directors, International Centre for the Environmental and Nuclear Sciences (ICENS)
- Member, Intellectual Property Rights Committee, UWI.
- Member, CHEMLAB Project Committee, Journal of Chemical Education, American Chemical Society

- Member, Board of Governors, Zenith Preparatory and Learning Centre
- Regional Editor: *Molecules*
- Vice President, Jamaica Society for Scientists and Technologists

Professor R. Lancashire

- University Representative, Board of the Jamaica Computer Society Education Foundation
- Executive Member, Jamaica Society of Scientists and Technologists
- Leader, IUPAC Task Group on EMR data structures

Dr. P. Maragh

- Member, National Industrial Safety Committee – Bureau of Standards
- Member, Museums Advisory Board – Institute of Jamaica
- Faculty Representative, FPAS on WIGUT Executive
- Treasurer, National Council for Indian Culture in Jamaica.

Dr. D. Minott

- Member, Jamaica Bureau of Standards – Coconut Water Technical Committee
- Member, Agro-Processing Resource Network
- Member, Scientific Research Council Board's Sub-Committee for the Food Technology Institute
- Member, National Agricultural Health and Food Safety Coordinating Committee
- President, WIGUT (Jamaica)
- Director, Better Process Control School (certification for the food industry)
- Member, Advisory Board – Guiding Light

Dr. W. Pinnock

- Member, National Radiation Safety Council, Ministry of Health, Government of Jamaica.

- Member, Steering Committee for Food Irradiation, National Commission of Science and Technology, Office of the Prime Minister.

Dr. R. Porter

- Member, Working Group (under the directive of PIOJ) to investigate the feasibility of commercialization of products from ten local plants.

Dr. D. Ramdon

- Member, Organizing Committee for Caribbean Advanced Proficiency (CAPE) Workshop 2003-2004.

Professor P. Reese

- Member, Equine Drug Testing Committee
- Vice President, WIGUT (Jamaica)
- WIGUT Representative on (i) Negotiating Team for 2002-2005 Salary Claim (ii) Car, House and Consumption Loan Committee; and (iii) Sabbatical Leave Committee
- Organising Secretary, Mona Symposium 2004: Natural Products & Medicinal Chemistry.

Dr. N. Sadler-McKnight,

- Member, Board Natural Resources Conservation Authority.
- Member, Technical and Finance Committee of the Scientific Research Council
- Council Member, Jamaica Society for Scientists and Technologists
- Executive Secretary, Alumni and Friends of the Department of Chemistry, UWI, Mona (CHEMSAF).

Dr. M. Singh-Wilmot

- Member, Committee of Board of Teacher Education and UWI for Double Option Science for Teachers' Colleges.
- Member, Organizing Committee for Caribbean Advanced Proficiency (CAPE) Workshop 2003-2004.

VISITORS TO THE DEPARTMENT

Professor Malcolm Chisholm, Inorganic Chemistry External Examiner and Distinguished Professor of Mathematics and Physical Sciences of the University of Ohio

Professor Delroy Baugh, from the Department of Chemistry and Biochemistry, University of California, Los Angeles, CA (Guest Lecturer in Physical Chemistry)

Dr. Ian Lambert, Food Science, UWI St. Augustine (Guest Lecturer in Food Chemistry)

Professor CNR Rao, FRS, Linus Pauling Research Professor, CSIR Centre of Excellence in Chemistry and Physics of Materials Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur, Bangalore, India.

Professor David Williams of Imperial College, London, Professor of Chemical Crystallography

Dr. A. John Alcock, FRSC, Principal Research Office, Institute for Microstructural Sciences, National Research Council of Canada, Ottawa, Ontario.

Mr. J. Anthony Clarke, Manager, University Branch, Bank of Nova Scotia Jamaica Limited.

Dr. Lyndon Johnson, Managing Director, Technosol Limited, Kingston

Mr. Gladstone Ivey, Chief Chemist, Petroleum Company of Jamaica (Petrojam)

Dr. Romola Rodriques, Postdoctoral Fellow, University of Kansas

Mr. Ramesh Sujunani, Gemmologist, Ocho Rios

Mr. Compton Beecher, Chief Forensic Officer, Forensic Laboratory

Mrs. Joy Spence, General Manager, Quality Division, Wray & Nephew Limited.

Dr. Ronald Lee, Ryder Eminent Scholar, College of Business, Florida International University.

DEPARTMENT OF GEOGRAPHY AND GEOLOGY

Professor Elizabeth Thomas-Hope, MA *Aberdeen*, MS *Penn State*,
DPhil *Oxon* – Head of Department

WORK OF THE DEPARTMENT

The Department had many successes over the past year, but there was also one sad event in November 2002 with the tragic death of **Mr Earl Wright**, a graduate of the Department and former part-time lecturer in Geology. We were deeply shocked by his death and we remember him with affection.

Mr Remy Sietchiping joined the Department as Temporary Lecturer in Geography.

The inaugural lectures of two recently-appointed professors were presented during the year: **Professor Trevor Jackson** on “Tracing Geochemical Signatures in Hot Rocks across the Caribbean” on August 14, 2002, and **Professor Wilma Bailey** on “Family Planning, Reproductive Health and the Health of Communities” on October 23, 2002.

Professor Elizabeth Thomas-Hope was awarded a Mona Research Fellowship to conduct research into “Environmental Management in Economic Performance in the Caribbean.” **Mrs Adonna Jardine-Comrie** was appointed Junior Research Fellow on the project.

Two lecturers who joined the Department in the previous year were awarded UWI Special Initiative Grants: **Dr Susan Mains**, to work on “Mobility and Migration: Exploring Transnationalism in the Context of Jamaica,” and **Dr Faisal Butt**, to work on “Modelling Groundwater Flow in the Alluvial Aquifer of the Lower Yallahs Basin, St Thomas.”

The main focus of the Department's activities on the University's Research Day, January 30, 2003, was the formal opening of the new exhibit of the cast of the fossil sea cow, *Pezosiren portelli*, in the Geology Museum. The fossil is the oldest sea cow ever discovered in Jamaica. **Dr Simon Mitchell** and **Dr Thomas Stemann** were members of the international team of scientists who worked on the excavation of the fossil in St James. Funding for the project was provided by the National Geographic Society and by Barbara and Reed Toomey. The opening of this exhibit received considerable media coverage, and it remains an important feature of the Geology Museum's collection.

At the University's Research Day annual award ceremony, two members of the Department were recognized for their work. **Professor Wilma Bailey** was recognized as a Distinguished Researcher for her work with colleagues in the Faculty of Social Sciences on "Family and the Quality of Gender Relations: A Situational Analysis of Reproductive Health in the Caribbean." **Dr Faisal Butt** won an award for Best Publication in the Faculty of Pure and Applied Sciences, for his paper (with non-UWI collaborators) on "Modelling Late Cenozoic isostatic elevation changes in the Barents Sea and their implications for oceanic and climatic regimes: preliminary results."

Dr Butt also won the 2002 START [System for Analysis, Research and Training] Young Scientist Award.

Professor Wilma Bailey received an award for more than twenty years of continuous service to the Caribbean Examinations Council (CXC) on the occasion of the Council's thirtieth anniversary.

Mr Rafi Ahmad was recognized by the International Landslide Research Group (ILRG) for his years of leadership in landslide hazard reduction in the Caribbean, and was presented with a certificate and a citation by Dr Earl Brabb, ILRG President, in July 2003.

Professor Trevor Jackson was elevated to a Fellow of the Caribbean Academy of Sciences in August 2002.

Dr Balfour Spence represented UWI as a regional team member on the Japan International Cooperation Agency (JICA) funded Caribbean Disaster Management (CADM) project. The project is intended to promote flood hazard loss reduction in the Caribbean through the development of flood hazard maps which will be used to inform community disaster management planning. To promote the research

capacity of the Unit for Disaster Studies, Dr Spence has obtained approval of a research grant valued at nearly US\$50,000 from JICA to conduct two technical research activities. Collaborating with Dr Spence are **Dr Faisal Butt** and other members of the Department, as well as the Caribbean Disaster Emergency Response Agency (CDERA).

Dr. Thomas Stemann is a co-investigator on two grants from the National Geographic Society. The first is to study “The Pliocene reefs of Jamaica: implications for biodiversity and faunal turnover,” covering work on the Hopegate Formation of Jamaica, in association with principal investigator Dr. S.K. Donovan (National Natuurhistorisch Museum, Leiden, The Netherlands), and R. Portell (Florida Museum of natural History, Gainesville, Florida). The second project is entitled “Dawn of land and sea mammals in the West Indies: Seven Rivers, Jamaica,” covering fieldwork excavating fossil manatees and other vertebrate material, in association with principal investigator Dr. Daryl Domning (Howard University).

Dr Susan Mains was co-chair and co-organizer for a series of Geographic Perspectives on Women/Latin American/Qualitative Geography Specialty Group sponsored sessions on “Caribbean Stories: ‘Representing’ Voices from the Margins?” at the Annual Meeting of the Association of American Geographers, New Orleans, March 2003.

Three postgraduate students, Corin Bailey (Geography), Thérèse Ferguson (Environmental Management), and Gavin Gunter (Geology), returned to the Department from their year in the United Kingdom at the Universities of London and Liverpool as recipients of Commonwealth Split-Site Awards. Another two postgraduate students, Sherene James (Geology) and Karen Thomas (Geography), have won these awards for September 2003, and will be proceeding to the University of Liverpool.

Fifteen students graduated in November 2002 with the MSc degree in Integrated Urban and Rural Environmental Management, and in the current year 21 students are registered in this programme, which is coordinated by **Professor Elizabeth Thomas-Hope** in the Environmental Management Unit.

Seventeen students, including four from Appalachia State University (USA), registered for the summer course GL30D: Analysis and Management of Geohazards and Risks, which was once again run by **Mr Rafi Ahmad**. As part of this course, Mr Ahmad organized a Debris Flow

Workshop, sponsored by the Caribbean Cement Company and the International Consortium on Landslides.

The Sedimentary Basin Resource Assessment (SEBRA) Project, directed by **Dr Simon Mitchell** and supported by a grant from the Environmental Foundation of Jamaica, moved into its second year; detailed data have now been collected from the Rio Minho.

The Department hosted a visit from Dr Desa Djordjevic Milutinov, Curator of Palaeobotany, Natural History Museum, Belgrade, Yugoslavia. He examined the Geology Museum's collection of plant fossils and established names for specimens previously identified. He also presented a collection of Miocene plant fossils from Serbia to the Museum.

The Department also welcomed **Dr Duncan McGregor**, Royal Holloway College, University of London, who, as external examiner for Physical Geography, spent one week reviewing examination materials and course structures and holding discussions with staff and students.

The Department continued to administer the Earthquake Unit, the Unit for Disaster Studies, and the Environmental Management Unit.

RESEARCH IN PROGRESS

Mr Rafi Ahmad

- Neotectonics;
- Landslide processes and hazards;
- Structural and lithological controls on the evolution of landforms;
- Mapping and assessment of natural hazards;
- Preparation of hazard maps.

Dr Benedict Arimah

- Measuring and explaining the provision of infrastructure in African cities;
- Human development and poverty alleviation in Africa.

Professor Wilma Bailey

- An atlas of HIV/AIDS in the Caribbean;
- Climate and dengue in the Caribbean.

Dr David Barker

- Alternatives to the traditional yam stick method of staking yams.

Dr Faisal Butt

- Modelling groundwater flow in the alluvial aquifer of the lower Yallahs basin, St Thomas, Jamaica;
- The influence of climatic and tectonic changes on high erosion rates during the Cenozoic - examples from a polar margin;
- Relief changes in the Barents Sea and the Mid-Pleistocene climate shift.

Professor Trevor Jackson

- Volcanic petrology of pre-Soufrière rocks, St Vincent;
- Geochemistry of the Miocene bentonites of Jamaica;
- Mineralogy of the black sands of the south coast of Jamaica;
- Mineralogy of the volcanoclastic turbidites of the Grand Bay Formation, Carriacou;
- Chemistry and mineralogy of Jamaican agates.

Dr Susan Mains

- Diaspora dreams and stories of Jamaican migration.

Dr David Miller

- Review of the karst geomorphology of the White Limestone Group, Jamaica;
- Ridge, cone and tower karst geology and geomorphology in southern St Elizabeth, Jamaica;
- Palaeokarst in southern St Elizabeth, Jamaica;

- The geomorphological legacy of Quaternary environmental change, south central Jamaica;
- The palaeoenvironmental significance of solifluction deposits and cryoplanation terraces in southwest England.

Dr Simon Mitchell

- Sedimentology of Recent carbonate beach sediments in Jamaica;
- Lithostratigraphy and sedimentology of the Yellow Limestone Group, Jamaica (with Dr R. Maharaj, Institute of Marine Affairs, Trinidad);
- Lithostratigraphy and palaeogeography of the White Limestone Group, Jamaica;
- Sedimentology and palaeontology of the Red Chalk (with Dr C.J. Underwood, Birkbeck University, UK);
- Geology and stratigraphy of the Central Inlier, Jamaica; sustainable development of sand mining and sediment budgets in Jamaican rivers (SEBRA Project);
- Palaeokarst in Jamaica (with Dr D.J. Miller, Department of Geography and Geology, UWI);
- Origins of sea cows (with Dr D. Domning, Howard University, USA);
- Cretaceous and Eocene echinoderms (with Dr S.K. Donovan, Leiden, Netherlands);
- Taxonomy and biostratigraphy of rudist bivalves; biostratigraphy and palaeoecology of Jamaican Cretaceous ostracodes;
- Taxonomy and evolution of the coleoidea; palaeontology of sharks (with Dr C.J. Underwood, Birkbeck University, UK);
- Geoarchaeology of Taino settlements in Jamaica (with Dr P. Allsworth-Jones, Department of History and Archaeology, UWI);
- Geology and geochemistry of dolomite in the Caribbean;

- Sedimentation in active strike-slip fault systems - a case example from southeastern Jamaica;
- Strontium isotope stratigraphy of Late Cretaceous rudists (with Dr T. Steuber, Ruhr-Universität, Germany).

Professor Emeritus Edward Robinson

- Constructing a larger foraminiferal zonation for the Tertiary rocks of Jamaica;
- Strontium isotope ratio dating for the Eocene-Miocene limestones of Jamaica.

Mr Remy Sietchiping

- Spatial analysis of HIV/AIDS/STI in Jamaica;
- Monitoring urban growth of the Kingston region - GIS, GPS and remote sensing perspectives;
- Fusion of IKONOS and Landsat images to discriminate land use change in Kingston;
- Using remote sensing data to investigate land degradation and sedimentation in the Péligre dam, Haiti.

Dr Thomas Stemann

- Extinction and speciation patterns in reef corals from the Hopegate Formation (Late Pliocene), Jamaica;
- Study of reef coral biodiversity in the Late Cretaceous of Jamaica (with Gavin Gunter and Simon Mitchell);
- Statistical analysis of Eocene foraminifera (with Georgette D'Aguilar and E.R. Robinson);
- Fossil vertebrates of the Jamaican Eocene (with Daryl Domning, Howard University).

Professor Elizabeth Thomas-Hope

- Biodiversity and environmental management;
- Caribbean international migration;
- Poverty and the urban environment;
- Children's perception of the environment;

– Social and educational aspects of disaster planning.

PAPERS PRESENTED

- **R. Ahmad.** “Damaging landslides related to the intense rainstorm of 27 October – 8 November 2001, Portland, Jamaica.” Tenth International Conference and Field Trip on Landslides, Poland, September 6-16, 2002.
- **R. Ahmad.** “Structural and lithological controls on landslides in the northern Caribbean Plate Boundary Zone: Jamaican example.” Tenth International Conference and Field Trip on Landslides, Poland, September 6-16, 2002.
- **R. Ahmad & B. Lawrence.** “Assessment of rainfall characteristics and landslide hazard in Jamaica.” Sixth Conference, Faculty of Pure & Applied Sciences, UWI, Mona, March 18-20, 2003.
- **R. Ahmad & D. Rowe.** “Deep-seated gravitational block-type slope movements in the Scotland District, Barbados.” Sixth Conference, Faculty of Pure & Applied Sciences, UWI, Mona, March 18-20, 2003.
- **R. Ahmad, D. J. Miller & D. Rowe.** “Landslides related to precipitation in eastern Jamaica.” Sixth Conference, Faculty of Pure & Applied Sciences, UWI, Mona, March 18-20, 2003.
- **R. Ahmad.** “Natural hazard maps in Jamaica: foundation for sustainable development.” National Scientific Conference on the Environment, Kingston, Jamaica, April 9-10, 2003.
- **R. Ahmad.** “Hurricane Preparedness Workshop”, sponsored by the Insurance Company of the West Indies Group Foundation, Kingston, Jamaica, June 6, 2003.
- **W. Bailey.** “Trainers Workshop, UWI HIV/AIDS Response Programme”, Ocho Rios, Jamaica, May 3-6, 2003.
- **W. Bailey.** “Adaptive capacity and dengue fever in Jamaica.” First Latin American and Caribbean Regional Workshop on Climate Change, San Jose, Costa Rica, May 26-30, 2003.

- **W. Bailey.** “WHO/UNESCO Training Workshop on Methods for HIV/AIDS Estimates and Projections”, Ocho Rios, Jamaica, July 21-24, 2003.
- **D. Barker & C. Beckford.** “The yam stick problem in Jamaica: using farmers’ knowledge in the search for sustainable solutions.” Annual Conference of the Association of American Geographers, New Orleans, March 2003.
- **I.C. Brown, S.F. Mitchell, D.P. Domning, R.W. Portell & S.K. Donovan.** “New fossil sea cow exhibit at the Geology Museum, University of the West Indies.” Sixth Conference, Faculty of Pure & Applied Sciences, UWI, Mona, March 18-20, 2003.
- **S.K. Donovan, I.C. Brown, T.A. Jackson & S.J. Wood.** “Small is beautiful? Progress at the Geology Museum, UWI, Mona since 1988.” International Cultural Heritage in Geosciences, Mining and Metallurgy: Libraries-Archives-Museums: Museums and their Collections, Leiden, The Netherlands, June 2003.
- **J. Karanjac.** “Leaky underground storage tanks (LUST): Simulating the fate of benzene and other contaminants in groundwater systems. Case studies: Waycross, Georgia; East Village, Alabama; and a site in Minnesota.” Environmental Management and Regulation of Petroleum Storage Facilities, Kingston, Jamaica, October 2002.
- **J. Karanjac.** “Groundwater information systems as decision-making tools. Case study: Jamaica and Trinidad and Tobago.” CWWA/CEF 2002 Conference.
- **S.P. Mains.** “Mobility and exclusion: towards an understanding of migration in the context of Jamaica.” UN WIDER Conference on Poverty, International Migration and Asylum, Helsinki, Finland, September 2002.
- **S.P. Mains.** “Terror and traveling: media maps and undocumented immigration at the US-Mexico border.” Border Cities/Border Cultures Conference, University of Wisconsin, Milwaukee, November 2002.

- **S.P. Mains.** “Life and debt in a small place.” Annual West Indian Literature Conference: Caribbean Currents, University of Miami, Coral Gables, Florida, March 2003.
- **S.P. Mains.** “Passages: transatlantic border crossing between the West Indies and the UK.” Annual Meeting of the Association of American Geographers, New Orleans, March 2003.
- **S.F. Mitchell.** “Morphology, microstructure and stratigraphy of some small, Late Cretaceous radolitic rudists from Jamaica.” Sixth International Congress on Rudists, Rovinj, Croatia, September 29-October 5, 2002.
- **S. Khan & S.F. Mitchell.** “Possible source of a major sediment producer on tropical carbonate beaches – amorphous grains.” Sixth Conference, Faculty of Pure & Applied Sciences, UWI, Mona, March 18-20, 2003.
- **S. James & S.F. Mitchell.** “Incised fan delta deposits, west side of the Port Morant harbour.” Sixth Conference, Faculty of Pure & Applied Sciences, UWI, Mona, March 18-20, 2003.
- **E. James & S.F. Mitchell.** “Dolomite textures in Eocene limestones of central Jamaica.” Sixth Conference, Faculty of Pure & Applied Sciences, UWI, Mona, March 18-20, 2003.
- **G.C. Gunter, J.D. Marshall & S.F. Mitchell.** “Palaeotemperature estimates for the Upper Cretaceous (Late Maastrichtian) of Jamaica.” Sixth Conference, Faculty of Pure & Applied Sciences, UWI, Mona, March 18-20, 2003.
- **S.F. Mitchell.** “Timing of tectonic episodes based on a new Late Cretaceous Caribbean rudist biostratigraphy.” GeoMin 2003, Cuban Geological Society, Havana, Cuba, March 24-29, 2003.
- **R. Sietchiping.** “Geographic Information Systems and public health.” Jamaica Association of Public Health Inspectors, Spanish Town, Jamaica, November 2002.
- **R. Sietchiping & V. Grant.** “GIS and remote sensing: an answer for Jamaica in comprehensive disaster management.” National Scientific Conference on the Environment, Kingston, Jamaica, April 9-10, 2003.

- **R. Sietchiping.** “GIS and cellular automata for urban dynamics.” Sixth AGILE Conference on Geographic Information Science, Lyon, France, April 24-26, 2003.
- **T.A. Stemann.** “Were there coral communities in the Caribbean during the Eocene?” Geological Society of America Annual Meeting, Denver, Colorado, October 27, 2002.
- G. D’Aguilar, **E.R. Robinson** & **T.A. Stemann.** “Larger foraminiferal associations in the Eocene limestones of the Caribbean.” Sixth Conference, Faculty of Pure & Applied Sciences, UWI, Mona, March 18-20, 2003.
- **E. Thomas-Hope.** Discussant on “The potential of the school system in educating the Jamaican public about natural hazards.” International Hurricane Center, Florida International University, Miami, USA, September 15-16, 2002.
- **E. Thomas-Hope.** “Global migration management and the socio-economic integration of migrants.” Technical Secretariat on the Social Dimension of Globalization, International Labour Organization, Geneva, Switzerland, September 18-19, 2002.
- **E. Thomas-Hope.** “Irregular migration and asylum seekers in the Caribbean.” United Nations Conference on Poverty, International Migration and Asylum, World Institute for Development Economics Research, Helsinki, Finland, September 27-28, 2002.
- **E. Thomas-Hope.** “Return of qualified migrants and new initiatives in international migration programmes in the Caribbean region.” International Migration Policy Seminar, International Organization for Migration, Santo Domingo, Dominican Republic, October 29, 2002.
- **E. Thomas-Hope.** “Labour migration: global standards and local characteristics in the Caribbean.” International Migration Policy Seminar, International Organization for Migration, Santo Domingo, Dominican Republic, October 31, 2002.
- **E. Thomas-Hope.** “Human rights of migrants and trafficking in the Caribbean.” United Nations Economic Commission for

Latin America and the Caribbean, Santiago, Chile, November 19-22, 2002.

- **E. Thomas-Hope.** “The development of a culture of disaster mitigation: the programme in disaster studies in the Department of Geography and Geology, University of the West Indies.” Seminario Fuerzas Aliadas Humanitarias 2003, Managua, Nicaragua, February 24-28, 2003.
- **E. Thomas-Hope.** “Skilled returnees to Jamaica and current migration theory.” Annual Conference of the Association of American Geographers, New Orleans, USA, March 5-10, 2003.
- **E. Thomas-Hope.** “Land management research at Mona. Workshop on Land Administration and Management in the English-Speaking Caribbean”, Port of Spain, Trinidad and Tobago, March 19-21, 2003.
- **E. Thomas-Hope & B. Spence.** “Biodiversity in sustainable agricultural practices: implications for agrochemical usage in Jamaica.” National Scientific Conference on the Environment, Kingston, Jamaica, April 9-10, 2003.
- **E. Thomas-Hope & B. Spence.** “Placing a value on the environment.” The National Environment & Planning Agency (NEPA) Conference of Puisne Judges and Resident Magistrates, Ocho Rios, Jamaica, May 17, 2003.
- **E. Thomas-Hope.** “Mechanisms and policy recommendations for sharing the gains of migration.” International Institute for Labour Studies Conference on the Migration of the Highly Skilled, Geneva, Switzerland, May 26-27, 2003.
- **E. Thomas-Hope.** “Caribbean migration and the transnationalization of social capital.” Conference on The Caribbean World: Challenges and Prime Movers, Université de Montaigne, Bordeaux, France, June 1-6, 2003.
- **E. Thomas-Hope & B. Spence.** “Methods for calculating environmental values, deterrents and penalties.” The National Environment & Planning Agency (NEPA) Conference of Appellate and High Court Justices, Ocho Rios, Jamaica, June 22, 2003.

PUBLICATIONS

Refereed

- * **H.A. Ellis, N.A. White, I. Hassan & R. Ahmad.** “A room temperature structure for anhydrous lead (II) decanoate.” *Journal of Molecular Structure*, 642, pp. 71-76.
- * **R. Ahmad.** “Primer on earthquake hazards and disasters in Jamaica.” *Caribbean Geography*, 10(2), 2002, pp. 124-136.
- * **D. Barker.** “Into the new millennium with a website for Caribbean Geography.” *Caribbean Geography*, 11(1), 2000, pp. 1-7.
- * **D. Barker & C. Beckford.** “Yam production and the yam stick trade in Jamaica: integrated problems for resource management.” In D. Barker & D.F.M. McGregor (eds.), *Resources, Planning and Environmental Management in a Changing Caribbean*. Kingston: UWI Press, pp 57-74.
- * **D.F.M. McGregor & D. Barker.** “Environment, resources, and development: some reflections on the Caribbean research agenda.” In D. Barker & D.F.M. McGregor (eds.), *Resources, Planning and Environmental Management in a Changing Caribbean*. Kingston: UWI Press, pp. 1-10.
- * **I.C. Brown & D.M. Langner.** “Type and figured specimens in the Geology Museum, University of the West Indies, Mona Campus, Jamaica.” *The Geological Curator*, 7(8), pp. 299-304.
- * **F.A. Butt, H. Drange, A. Elverhoi, O.H. Ottera & A. Solheim.** “Modelling Late Cenozoic isostatic elevation changes in the Barents Sea and their implications for oceanic and climatic regimes: preliminary results.” *Quaternary Science Reviews*, 21, 2002, 1643-1660.
- * **A. Elverhoi, F.V. de Blasio, F.A. Butt, D. Issler, C. Harbitz, L. Engvik, A. Solheim & J. Marr.** “Submarine mass-wasting on glacially influenced continental slopes: processes and dynamics.” In J.A. Dowdeswell & C.O. Cofaigh (eds.), *Glacially-Influenced Sedimentation on High-Latitude Continental Margins*, Geological Society of London Special Publication, 203, 2002, 73-87.

- * R.N. Abbott Jr., B.R. Bandy, **T.A. Jackson** & P.W. Scott. “Blueschist-greenschist transition in the Mt Hibernia schist, Union Hill, parish of St Thomas, Jamaica.” *International Geology Reviews*, 45, 2003, 1-15.
- * **J. Karanjac**. “Groundwater information systems as decision-making tools. Case study: Jamaica and Trinidad and Tobago.” *Caribbean Environmental Management Journal*, 1, 2002.
- * **S. Mains**. “Making news in southern California: representing national identity, borders, and migration.” *Hagar: International Social Science Review*, 2, pp. 271-298.
- * **S. Mains**. “Maintaining national identity at the border: scale, masculinity, and the policing of immigration in southern California.” In A. Herod & M. Wright (eds.), *Geographies of Power: Placing Scale*. London: Blackwell, 2002, pp. 192-214.
- * **S. Mains**. “The future of multi-ethnic Britain: media, diversity, and regional identity.” In S. Ralph, H. Manchester & C. Lees (eds.), *Diversity or Anarchy*, Luton: University of Luton Press, 2003, pp. 225-232.
- * **D.J. Miller** & **S.F. Mitchell**. “Palaeokarstic surfaces in the Guinea Corn Formation (Upper Cretaceous), Jamaica.” *Cretaceous Research*, 24, 2003, pp. 119-128.
- * **S.F. Mitchell**. “Palaeoecology of corals and rudists in mixed volcanoclastic-carbonate small-scale rhythms (Upper Cretaceous, Jamaica).” *Palaeogeography, Palaeoclimatology, Palaeoecology*, 186, 2002, 237-259.
- * T. Steuber, **S.F. Mitchell**, D. Buhl, G. Gunter & H.U. Kasper. “Catastrophic extinction of Caribbean rudist bivalves at the Cretaceous-Tertiary boundary.” *Geology*, 30, 2002, 999-1002.
- * **S.F. Mitchell** & G.C. Gunter. “Biostratigraphy and taxonomy of the rudist *Chiapasella* in the *Titanosarcolithes* limestones (Maastrichtian) of Jamaica”. *Cretaceous Research*, 23, 2002, 473-487.
- * G.C. Gunter, **E. Robinson** & **S.F. Mitchell**. “A new species of *Omphalocyclus* (Foraminiferida) from the Upper Cretaceous of

Jamaica and its stratigraphical significance.” *Journal of Micropalaeontology*, 21, 2002, 149-153.

- * **E. Robinson.** “Upper Paleogene larger foraminiferal succession on a tropical carbonate bank, Caribbean region.” In D.R. Prothero, L.C. Ivany & E.A. Nesbitt (eds.), *From Greenhouse to Icehouse: The Marine Eocene-Oligocene Transition*, 2003, 294-302.
- * **R. Sietchiping.** “Evolution de l'espace urbain de Yaoundé, au Cameroun, entre 1973 et 1988 par télédétection.” *Télédétection*, 3 (2-3-4), 2003, 137-144.
- * **E. Thomas-Hope.** *Irregular Migration and Asylum Seekers in the Caribbean*. World Institute for Development Economics Research, United Nations University, Helsinki, 2003, DP48, p. 20.
- * A. Acuna, E. Cervantes, G. Garland, G. Gonzalez, E. Horna, C. Monteiro Neto, B. Ratter, B. Ruiz & **E. Thomas-Hope.** “Inter-university cooperation in the field of integrated coastal zone management.” In M. Foth *et al.* (eds.), *Ten Years after Rio: Steps towards Sustainable Use and Development of Coastal and Marine Areas*. Bremen, Germany: Internationale Weiterbildung und Entwicklung gGmbH, 2002.
- * A. Alves, J. Brown, W. Ekau, H. Govan, A. Kunzmann, G. Liebezeit, A. Muhlig-Hofmann, L. Muoro-Wilson, **E. Thomas-Hope** & L. Weitzel. “Bismarck-Solomon Seas and Solomon Islands integrated coastal zone management pilot project.” In M. Foth *et al.* (eds.), *Ten Years after Rio: Steps towards Sustainable Use and Development of Coastal and Marine Areas*. Bremen, Germany: Internationale Weiterbildung und Entwicklung gGmbH, 2002.
- * **E. Thomas-Hope.** “Resource valuation techniques in promoting the sustainable use of coastal resources: the case of Ocho Rios, Jamaica.” In M. Foth *et al.* (eds.), *Ten Years after Rio: Steps towards Sustainable Use and Development of Coastal and Marine Areas*. Bremen, Germany: Internationale Weiterbildung und Entwicklung gGmbH, 2002.

Non-Refereed

- * D. Barker & D.F.M. McGregor (eds.). *Resources, Planning and Environmental Management in a Changing Caribbean*. Kingston: UWI Press, 2003 (281 pp.).
- * **E. Thomas-Hope**. *Caribbean Migration*. Kingston: University of the West Indies Press, 2002, 184 pp. (Reprint of *Explanation in Caribbean Migration: Perception and the Image*, Jamaica, Barbados and St Vincent.)
- * C. Beckford & **D. Barker**. "An evaluation of field trials of live yam sticks in Litchfield, south Trelawny." Technical Paper #3.
- * **S. Mains**. "Mobility and exclusion: towards an understanding of migration in the context of Jamaica." UN WIDER conference report on Poverty, International Migration and Asylum, 2002.
- * **S. Mains**. *Geographic Perspectives on Women Specialty Group of the Association of American Geographers Newsletter*, December 2002.
- * **S. Mains**. Review of S. Saldivar-Hull, *Feminism on the Border: Chicana Gender Politics and Literature*. In *Gender, Place and Culture*, 9(3), 2002, pp. 307-309.
- * **S. Mains**. *Geographic Perspectives on Women Specialty group of the Association of American Geographers Newsletter*, February 2003.
- * **R. Sietchiping** & V. Grant. "GIS and remote sensing: an answer for Jamaica in comprehensive disaster management." *Proceedings of the National Scientific Conference on the Environment*, Kingston, Jamaica, April 9-10, 2003.
- * **R. Sietchiping**. "GIS and cellular automata for urban dynamics." *Proceedings of the Sixth AGILE Conference on Geographic Information Science*, Lyon, France, April 24-26, 2003, 389-399.
- * **E. Thomas-Hope**. "Trafficking in the Caribbean and the human rights of migrants." *Proceedings of the Conference of the United Nations Economic Commission for Latin America and the Caribbean*, Santiago, Chile, 2002.
- * **E. Thomas-Hope**. "Race and migration in the Hispanic Caribbean: the reception of West Indians in Panama, Costa Rica

and Cuba (1840-1940).” In A. Insanally (ed.), *The Socio-Economic and Cultural Impact of West Indian Migration to Costa Rica (1870-1940)*. Kingston: The Latin American-Caribbean Centre, Third in Seminar Series on Intra-Regional Migration, UWI, 2003, pp. 46-57.

- * **E. Thomas-Hope** & B. Spence. “Biodiversity in sustainable agricultural practices: implications for agrochemical usage in Jamaica.” *Jamaica Institute of Environmental Planners* (CD-ROM).

PUBLIC SERVICE

R. Ahmad

- Member, National Damage Assessment, Recovery and Rehabilitation Subcommittee, Office of Disaster Preparedness and Emergency Management, Jamaica;
- Member, Peer Review Panel, Guidelines for Integrating Climate Change and Natural Hazards in Environmental Impact Assessments, Adapting to Climate Change in the Caribbean (ACCC)
- Caribbean correspondent, International Landslide Research Group;
- Member, Board of Representatives, International Consortium on Landslides (Coordinator, ICL Events Committee, and Assistant to ICL President);
- Fellow, Geological Society London.

W. Bailey

- Chairman, Mona Campus Committee on Examinations;
- Member, UWI HARP Subcommittee on KAPB Studies;
- Chairman, UWI HARP Subcommittee on Research;
- Faculty representative, Board of Gender Studies, UWI;
- UWI alternate representative, Board of the Environmental Foundation of Jamaica;
- Chief Examiner, CAPE Geography;
- Convenor of the Geography Panel, CAPE.

D. Barker

- Editor, *Caribbean Geography*;
- Chairman, Aqueduct newsletter subcommittee, SCR Club;
- Member, Management Committee, SCR Club.

F. Butt

- External examiner, University of Oslo;
- External examiner, Council of Community Colleges in Jamaica;
- Member, Caribbean Academy of Sciences;
- Member, Geological Society of Jamaica.

T. Jackson

- Fellow, Caribbean Academy of Sciences;
- Honorary member, Geological Society of Jamaica;
- Member, Geological Society of Trinidad & Tobago;
- Member, American Geophysical Union; Member, Association of Geoscientists for International Development;
- Member, International Liaison Group on Gold Mineralization;
- Member, Geological Society of America;
- Member, Yorkshire Geological Society.

S. Mains

- Board member (program director), Cultural Geography Specialty Group of the Association of American Geographers;
- Board member, Geographic Perspectives on Women Specialty Group of the AAG;
- Editor, *Geographic Perspectives on Women Specialty Group of the AAG Newsletter*;
- Manuscript reviewer, *GeoJournal*;
- Manuscript reviewer, *South Eastern Latin Americanist*;
- Member, fundraising committee, Women in Film and Television - Jamaica.

D.J. Miller

- Book review editor, *Caribbean Geography*;
- Secretary, Jamaican Association of Geomorphologists.

S.F. Mitchell

- Chairman, Commission on Jamaican Lithostratigraphy;
- Member, Technical Working Group on Jamaican Beach Policy;
- Council member, Geological Society of Jamaica;
- Editor, *Caribbean Journal of Earth Science*;
- Editor, *Contributions to Geology* (UWI).

T.A. Stemann

- Vice-President, Geological Society of Jamaica;
- Chairman, Field Trip Subcommittee, Geological Society of Jamaica;
- Member, Earth Science Week Subcommittee, Geological Society of Jamaica;
- Coordinator, Department of Geography and Geology Brown Bag Seminars.

E. Thomas-Hope

- Chair, Board of the Jamaica Sustainable Development Network;
- Member, Tribunal for the NRCA Act of the Ministry of Land and Environment;
- Member, Board of Directors, Jamaica Engineers Foundation;
- Member, Children's Coalition, UWI;
- Member, Board of Management, Commonwealth Institute, University of London;
- Director, Luis Fred Kennedy Environmental Foundation;
- Member of the editorial advisory boards of *The Caribbean Journal of Agriculture and Natural Resources*, *The International Journal of Disability Studies*, and *Progress in Development Studies*;

CATEGORIES OF STUDENTS

Undergraduates: Geography

Course	Regd	Sat	Passed	% Passed
GG10A Introduction to Human Geography	95	92	77	81
GG10B Introduction to Physical Geography	90	90	54	60
GG20C Geography of the Caribbean	46	46	42	91
GG21A Urban Geography	43	43	43	100
GG21B Geography & Development	34	34	32	94
GG22A Geosphere & Hydrosphere	52	52	32	62
GG22B Atmosphere & Biosphere	47	47	41	87
GG31C Tropical Agricultural Systems & Development	30	30	28	93
GG31D Global Structure & Political Order	16	16	14	88
GG32A Geomorphic Processes & Landforms	20	20	18	90
GG32D Health & Society	28	28	26	93
GG33B Urban & Regional Planning	33	33	33	100
GG33F Introduction to Geographical Information Systems	27	27	27	100
GG33G Disaster Management	40	38	34	89
GG33H Environmental Resource Management	40	40	40	100
GG360 Research Paper	57	56	49	88

Undergraduates: Geology

Course	Regd	Sat	Passed	% Passed
GL10A Introduction to Earth Sciences I	63	62	53	85
GL10B Introduction to Earth Sciences II	37	37	24	65
GL21A Palaeontology	23	23	22	96
GL22A Sedimentology	23	22	22	100
GL23B Igneous Petrology	19	19	18	95
GL24B Metamorphic Petrology	22	22	20	91
GL25A Geological Mapping & Map Interpretation	18	18	18	100
GL30D Analysis & Management of Geohazards & Risks	17	17	17	100
GL311 Field Geology	11	11	11	100
GL32A Caribbean Geology	9	9	8	89
GL33A Engineering Geology & Hydrogeology	12	12	10	83

GL34A	Advanced Sedimentology & Fossil Fuels	14	14	14	100
GL35A	Advanced Palaeontology	4	4	4	100
GL36A	Applied Geophysics	7	7	7	100
GL38B	Economic Geology	9	9	9	100
GL39B	Plate Tectonics & Structural Analysis	7	7	7	100
GL39L	Environmental Geology & Management	10	10	10	100

Undergraduate Prizes Awarded

The Barry Floyd Prize for the best student in Level I Geography was awarded to **Soyini Ashby**.

The Geological Society of Jamaica Scholarship was awarded to **Angela Munroe**.

The Harry Kuarsingh Memorial Bursary (Geology) was awarded to **Ryan Ramsook**.

Postgraduates: Environmental Management

Twenty-one students were registered for the MSc degree in Natural Resource Management – Integrated Urban and Rural Environmental Management.

Research Postgraduates

R.E.A. Robertson was awarded the PhD degree in Geology for his dissertation on “The Volcanic Geology of the Pre-Soufrière Rocks on St Vincent, West Indies.” He was supervised by **Professor Trevor Jackson**.

DISTINGUISHED VISITORS

Professor Rick Abbott, Appalachia State University, USA.

Dr Earl Brabb, Scientist Emeritus, US Geological Survey, USA.

Mr James Jacobs, Hydrogeologist and Senior Fulbright Specialist,
USA.

Dr Duncan McGregor, Royal Holloway College, University of
London, UK.

Dr Desa Djordjevic Milutinov, Natural History Museum,
Belgrade, Yugoslavia.

Mr Doug VanDine, VanDine Geological Engineering Ltd.,
Canada.

DEPARTMENT OF LIFE SCIENCES

Ralph D. Robinson BSc, PhD *Belfast* – Head of Department

WORK OF THE DEPARTMENT

Having undergone considerable restructuring of our undergraduate program, *viz.* removal of undersubscribed courses and amalgamating several others to produce new offerings in the 1999-2001 academic years, this year saw stabilization of enrolment of students in the established BL10L Animal Diversity and BL10M Plant Diversity courses (Figure) and increased enrolment in BB10A Cells, Biomolecules and Genetics and BB10B Introductory Microbiology courses. The latter two courses were pioneered and taught jointly by the Department of Life Sciences and the Biochemistry Section of the Department of Basic Medical Sciences. The partnership, which has operated for the last three years, augers well in maintaining optimal student numbers in our courses and ensures that all students reading for majors in biological and biochemical subjects receive the same solid academic grounding.

The Department of Life Sciences has now settled firmly on 4 undergraduate majors – Botany, Environmental Biology, Experimental Biology and Zoology – and 2 Minors – Botany and Zoology – as its primary B.Sc. offerings. Enrolment in the Environmental Biology degree over the past 2 years has been particularly encouraging, and is probably a function of the expertise and enthusiasm of staff researching and teaching environmental disciplines. The new major in Experimental Biology brings together our laboratory-based courses and will provide students with increased exposure to instrumentation and measurement.

The first phase of teaching in the BEd. Secondary (Distance) program that involved the Department saw the hosting of BL10M Plant Diversity in the summer. Two post-graduate students from the Department of Life Sciences and The Centre for Marine Sciences, **Ms Josette LaHee** and **Mr Peter Edwards**, respectively, delivered the course. **Dr Ralph Robinson** is the Subject Coordinator for the Biology component of the program on the Mona Campus, and he was recently appointed to the Steering Committee for the project.

For the first time in the history of the Department, a taught M.Sc. was hosted in September 2002. This program, entitled “Biological Approaches in Ecosystem Management” is coordinated by **Dr Peter Vogel** and offered by the Department under the Natural Resource Management umbrella. Designed specifically to provide the biologist with the necessary tools to conduct specific tasks in a team of environmental managers, 3 students are expected to graduate with the MSc. With improved advertisement and marketing, and resort to part-time registration, this year the program has attracted more than a dozen applications for its second running. During the year, the program was renamed M.Sc. Tropical Ecosystems Assessment and Management.

Another MSc, “Plant Production and Protection”, received approval of the University and will be offered in September 2003. The MSc will be coordinated **Dr Phyllis Coates-Beckford** and has so far attracted also more than a dozen applications.

Several members of staff and graduate students benefited from multimedia workshops run by the INFOCOM Centre, and Staff Development workshops offered by the Instructional Development Unit.

Plant and vehicles

The Department received 40 new slim-line Pentium-IV computers from the **Mona Information and Technical Services – Educational Technology Fund**. They replace the 40 or so Pentium I computers received with the new IDB-funded Biology Building 4 years ago. As has happened in the past, the equipment was quickly put to good use in our teaching, research and outreach programs.

The telephone system for the Department was rationalized during the year such that persons working in different parts of the Department (e.g. the old Botany or Zoology sections) can access individuals directly by telephone rather than going through the administrative staff in the main office for reconnection. The work was paid for by the Department.

Work that had begun in the old pantry area in the Department last year was completed over the summer, and a purpose-designed **Freshwater Ecology Laboratory** is the result. The refurbishment, which was paid for from Campus funds, constitutes dry and wet laboratory facilities that are physically linked with the existing aquarium room which also received sprucing up. The facility comes under the supervision of **Dr Eric Hyslop**, our freshwater ecologist. The **Parasite Research Laboratories** also received a facelift viz. floor tiling and repainting. This small project was funded by the Department.

The Department benefited from refurbishment of sanitary facilities that began 3 years ago in the Faculty. However, several facilities remain in need to attention. Over the year, several doors and other wooden installations in the Department had to be renovated or replaced resulting from (frankly) shoddy workmanship.

Insurance funds to replace Beröe, a 20-foot hull # PR574 with 2 Johnson outboard motors, that was stolen from Port Royal Marine Laboratory (PRML) in November 2001, were used to purchase a new 25 feet hull which is yet to be named. Several exercises saw the refurbishment of doors, windows and roofing at the Laboratory paid for by The University under the supervision of **Dr Mona Webber** who coordinates activities at PRML on behalf of the Department. Although the arrangements under which the UWI Shrimp Project uses PRML were clarified two years ago, landscaping of the site agreed with the Office of Finance *at that time has still not begun*. Unfortunately, the Mitsubishi twin-cab pickup, that normally serviced PRML and the Department, was stolen

from a location nearby the Campus. The vehicle was insured through The University, and it is hoped that we will be able to replace the vehicle soon.

Staff Matters

Sincere condolences were extended to **Dr Sasikala Potluri** and **Dr P.V. Devi Prasad** following the tragic death of their son **Avinash** during the year. Following a period of Compassionate Leave, **Dr P.V. Devi Prasad**, resigned his Senior Lectureship in the Department. **Dr Devi Prasad** is a former Head of the Department of Botany and an influential researcher; he will be missed by his colleagues and students alike, and carries with him the best wishes of us all. Dr Potluri was granted Compassionate Leave which lasted for most of the teaching year.

Dr Dunbar Steele, the first Head of the Department of Life Sciences, and former Head of the Department of Zoology continued his service to University through the Dean's Office as a researcher to oversee the pilot project involving mariculture of Jamaican red hybrid tilapia. He also oversaw Summer School in the Faculty.

Dr Dale Webber, **Dr Mona Webber** and **Dr Peter Vogel** were all promoted to Senior Lectureships in the Department in recognition of their professional accomplishments and commitment to their respective fields of study and the Department.

Mr Karl Aiken and **Dr Dale Webber** returned from sabbatical leave taken during the year. Whilst on leave, **Mr Aiken** conducted research associated with the Queen Conch Abundance Survey. The work showed that the Queen conch, though poached by foreign vessels, is still robust, but is in need of continued management by continued annual gradual reduction of the National Quota. Mr Aiken also brought to a conclusion his two-year study of The Whitehouse, Westmoreland Fishery which he conducted with his MPhil student, **Miss Anginette Murray**. During the course of the year, **Mr Aiken** also submitted for examination a doctoral thesis that is based on the use of otoliths (earstones) for aging fishes. **Dr Webber** conducted research of coastal wetlands and put much effort into formally publishing research conducted by himself and his graduate students over the past 5 years, particularly the internationally recognized research efforts on Kingston Harbour.

Dr Paula Tennant visited the U.S. Pacific Basin Agricultural Research Center, Hilo, Hawaii (May 20-July 12, 2003) and assisted with a

USAID project on setting up international protocols on the deregulation of transgenic papaya for lesser-developed countries.

Dr Mark Thomas embarked on Special Leave for one year to read for an MSc degree, related to his research, at The University of London. He was replaced by **Mrs Alicia Lyn-Sue Chin**, formerly Principal Scientific Officer in the Department, who brought considerable professionalism and expertise to the course. **Prof. Brian Freeman** taught BT21A Seed Plants during the period Dr Portluri was on leave, and contributed teaching in BL10L Animal Diversity whilst Mr Aiken was on Sabbatical leave.

Vacancies in the teaching establishment were filled using temporary staff. **Mr. Frederick Boyd** taught as a temporary replacement for **Dr PV Devi Prasad**. **Miss Metz Peterkin** and **Mrs Celia Jackson** were re-appointed as Teaching Assistants to work with large first year classes, and **Mr Hugh Lounges** operated as Systems Manager in the Department. **Mr Carlton Allen**, a MSc graduate in Agriculture Diversification, UMPHU, Dominican Republic, was employed, temporarily, as a Technician attached to the busy Botany Laboratory #2. Additionally, **Ms Stacey McKoy** and **Mr Jahsen Levy** were employed on a temporary basis as Laboratory Technicians in the demanding Level II Zoology and Aquatic Laboratory facilities in the Department.

Awards

Dr Wayne Forbes (a former graduate student), **Dr Ralph Robinson** of the Department of Life Sciences and **Professor Paul Reese** from the Department of Chemistry were formally recognized at the **Principal's Research Day** in January 2003 as Distinguished Researchers in the Faculty of Pure and Applied Sciences for their invention "MEDICAMENTS FOR THE TREATMENT OF *STRONGYLOIDES STERCORALIS* INFECTIONS" and for which they have received *Letters Patent* as inventors.

At a meeting of the Association of Marine Science Laboratories of the Caribbean held in Trinidad in July 2003, **Emeritus Professor Ivan Goodbody** was honoured for his past services to the association by appointment to Honorary Life membership and the initiation of a new prize named the Ivan Goodbody Prize for the best poster presentation by a student at the regular scientific meeting of the association. During the meeting, **Professor Goodbody** was presented with a plaque recognizing

his contributions to the association and he in turn made the presentation to the first student to win the prize.

Congratulations are extended to **Miss Anginette Murray** (MPhil Zoology candidate) who won the prize for best oral presentation by a student at the Sixth Biennial Conference of the Faculty of Pure and Applied Sciences in March 2003.

Drs Dale Webber and **Mona Webber** were the joint recipients of the **Principal's New Initiative Funding** of US\$9000 for publication of work on "The Kingston Harbour Project 1992-2002", which pulls together ten years research on Kingston Harbour and details problems and solutions for management. **Dr Eric Garraway** was awarded a **University Research Fellowship** to study the taxonomy and biodiversity of Jamaican invertebrate fauna. The project will augment traditional morphometric approaches with modern, molecular (DNA) technologies that strongly complement the Department's investment in senior technical staff and two modern laboratories dedicated to teaching and molecular biology research.

Workshops / Symposia

The Department hosted several training courses and workshops during the year. The Jamaica Ornamental Fish Farmers Association, in association with CIDA and the Jamaica Agricultural Development Foundation, presented two, two-day workshops in the Department.

In addition, The Nature Conservancy (USA) hosted a workshop in the Department that was dedicated to the use of Geographical information Systems in biodiversity conservation.

The Department actively participated in a workshop that was organized by the Faculty on developing and organising strategies for effective partnership and collaboration with industry and the private sector.

RESEARCH

The Department actively supported research work conducted by academic staff and graduate students, with several projects receiving international or local funding as well as support from The Board for Graduate Studies and Research and The University. The major research topics in the Department were of an applied nature.

The number of original, refereed articles published by staff and graduate students in the Department tripled compared with last year's output. However, the current rate of about 0.5 papers per staff member per year is still below par for the life sciences. The high, possibly excessive, amount of face-to-face teaching undertaken in the Department unfortunately restricts the time otherwise available for independent research that should culminate in publication of outcomes in high impact journals.

The Department actively participated in the Principal's Research Day (January 30-31) which was held in January 2003 through a series of posters and multimedia displays in the Assembly Hall and hosting an "open day" in the Department itself. Here, we highlighted particularly collaborative research projects that the staff and graduate students in the Department are engaged in.

A one-day, in-house seminar allowed graduate students to make oral presentations of their work to the Department and, as usual, the Department contributed several posters and displays at meetings of several Community-based Conservation groups across the island.

Staff and graduate students in The Department participated by way of oral and poster presentations in the 6th Conference of the Faculty of Pure and Applied Sciences.

Research Funding

Mr Karl Aiken	–	J\$ 2,573,890 Environmental Foundation of Jamaica
Dr Jane Cohen	–	J\$ 34,548 Graduate Studies and Research Fund
Dr Dwight Robinson	–	J\$ 2,637,500 Jamaica Agricultural Development Foundation
Dr Paula Tennant	–	J\$ 1,875,000 Jamaica Agricultural Development Foundation
Dr Byron Wilson	–	US\$ 1500 Audubon Zoo
	–	US\$ 4000 International Iguana Foundation
	–	US\$ 3750 Miami Metrozoo

- J\$ 43,500 UWI Research & Publications Fund
- Dr Dale Webber)
- Dr Mona Webber) – US\$ 9,000 Principal's New Initiative Fund

RESEARCH IN PROGRESS

Mr Karl Aiken

- use of otoliths in aging selected species of commercial marine fishes
- assessment of wetland fisheries
- management studies of Queen conch

Dr Jane Cohen

- tree-crop interactions and soil conservation in contour hedgerow agroforestry systems
- mulches as weed management strategies in organic farming
- herbicidal effectiveness of household disinfectants (with Mr D. Hutton)
- floristic survey of isolated limestone landforms in central Jamaica (with Dr D. Webber)

Prof. Brian Freeman

- insect biodiversity of temperate woodlands
- the population dynamics of bark beetles
- bionomics of the lane snapper

Dr Eric Garraway

- ecology and conservation of Jamaican butterflies

- the ecology of the brown citrus aphid and citrus leaf miner
- conservation of Jamaican manatees
- taxonomy and biodiversity of Jamaican moths, aphids, carabid beetles, land snails and millipedes

**Emeritus Professor Ivan Goodbody and
Mrs Charlotte Goodbody**

- studies of Caribbean Ascidiacea
- documentation of a collection of deep-sea animals in the Department
- provision of electronically formatted underwater photographs for use by researchers and students to identify specimens they may encounter in their work

Dr Eric Hyslop

- effects of pollutants, land use and anthropogenic disturbances (e.g. bed disruption) on benthic macroinvertebrate fauna of Jamaican rivers
- application of the concept of longitudinal zonation of benthic macroinvertebrate fauna and the River Continuum Concept to Jamaican rivers
- effect of bedrock composition on benthic macroinvertebrate fauna of Jamaican rivers
- biology of Jamaican fishes
- biology and taxonomy of the Neritidae (Gastropoda: Prosobranchia) in Jamaica
- existence of estuaries and the temporal succession of benthic macroinvertebrates after a flood event
- definition of *Gambusia* species of Jamaican rivers using molecular and morphological techniques
- macro-invertebrate fauna of the freshwater systems and caves of the Cockpit Country
- biology of *Trichoptera* in Jamaican rivers

Dr Kurt McLaren

- management and restoration of biodiversity in the limestone forests of Jamaica
- changes in regenerative strategies along a rainfall gradient in Jamaica

Dr Dwight Robinson

- transmission and management of the Pink Bollworm of West Indian Sea Island Cotton
- nutrition, weed and pest management practices for organic agriculture

Dr Ralph Robinson

- interactions between seawater-cultured tilapia and infections with *Neobenedenia melleni*
- immuno-epidemiological studies of human *Toxocara canis* infections
- molecular characterisation of hookworms from dogs
- epidemiology of rat lung worm infections (*Angiostrongylus cantonensis*) that may result in meningitis in humans

Dr Dunbar Steele

- biological, environmental and economic feasibility of tilapia mariculture
- the biology of the invasive Indo-Pacific green mussel *Perna viridis* in Kingston Harbour
- settlement and growth of post-larvae of the spiny lobster *Panulirus argus* in Jamaica

Dr Paula Tennant

- environmental bio-safety assessment of transgenic papaya carrying the *Papaya Ringspot Virus* coat protein and marker genes
- pathology of citrus diseases: citrus replanting project
- development of transgenic West Indian Sea Island Cotton with resistance against insect pests

Dr Mark Thomas

- investigations of embryonic exposure and levels of growth factor in oxidative stress
- the physiology of violence

Dr Kisan Vaidya

- genetic studies to produce photoperiod-insensitive and high yielding cultivars of sorrel
- genetics of morphological mutations in roselle (sorrel)
- genetic studies in mothbean (*Vigna aconitifolia*), mungbean (*Vigna radita*) and blue pea (*Clitoria ternatea*)

Dr Peter Vogel

- ecology and conservation of Jamaica's terrestrial vertebrates and their habitats
- studies of bird composition along gradients of habitat disturbance
- impact of an exotic predator on Jamaica's dry forest herpetofauna
- conservation of the Jamaican Iguana
- ontogeny of predation in anoline lizards
- management of columbid game birds
- assessment of Jamaica's important bird areas

Dr Dale Webber

- oceanography and coastal water quality assessments
- environmental management planning
- impact and amelioration of sediment and agrochemical pollution
- assessment of phytoplankton and the microbenthos associated with the conch industry of Jamaica

Dr Mona Webber

- development of appropriate standards and techniques for the assessment of mangrove lagoons and related systems

- water quality monitoring in mangrove lagoons using plankton and traditional indices
- biodiversity in Mangrove Lagoons
- zooplankton secondary production in Discovery Bay
- effects of anthropogenic stress on mangrove forests, and deep and shallow reefs off Discovery Bay
- zooplankton and larvae at Pedro Banks

Dr Byron Wilson

- ecology and conservation of the Jamaican Iguana and other lizards
- effects of exotic predators on Jamaican fauna
- biological assessments of Jamaica’s last remaining natural habitats
- social structure and movement patterns of the introduced Indian mongoose
- herpetofaunal assessments of the Cockpit Country

PAPERS PRESENTED

- Davis H. & Vogel P (2002). Effects of forest degradation on bird communities in the Cockpit Country, a limestone karst region of Jamaica. Third North American Ornithological Conference, 24 - 28 September 2002 in New Orleans, Louisiana.
- Douglas L, Sherry T & Vogel P (2002). Impact of habitat degradation on birds breeding in the life zone of tropical dry forests of southern Jamaica. Third North American Ornithological Conference, 24 - 28 September 2002 in New Orleans, Louisiana.
- Elliott, T & Webber, MK (2003). Temporal changes in mangrove root communities contrasting habitats of the Port Royal mangroves. 31st Scientific Meeting of the Association of Marine Laboratories of the Caribbean.

- Powell M, Wheatley A, Tennant P, Omoruyi, Gonsalves D, Asemota H & Ahmad, MHW (2002). The effects of consumption of coat protein transgenic papaya (*Carica papaya* L.) on liver and kidney enzyme functions in rats. West Indian Medical Journal Supplement 51 (4): 18
- Roberts M, Minott D, Tennant, P & Jackson C (2003). Comparison of selected nutritional and anti-nutritional components of transgenic and nontransgenic papaya fruit (*Carica papaya* L.) in Jamaica. Institute of Food Technologists' Annual General meeting, Chicago, Illinois, July 12-13, 2003
- Small H, Lue D, Webber DF & Webber MK (2003). Water quality of the Conch Fishery area at Pedro Bank, South of Jamaica. 31st Scientific Meeting of the Association of Marine Laboratories of the Caribbean.
- Vogel P (2003). West Nile Virus and Neotropical Bird Diversity. Pan American Health Organization, Ministry of Health and Canadian High Commission: National Conference on West Nile Virus, 21 January 2003, Kingston, Jamaica.
- Waugh CA Lindo, JF, Myrie C, Ashley D, Eberhard M & Robinson RD (2002). Wild rats as reservoirs of *Angiostrongylus cantonensis* in Jamaica. Proceedings of the 16th Annual Conference of the Scientific Research Council of Jamaica, Kingston, Jamaica.
- Webber DF, Webber MK, Bigg GR & Williams D (2003). The importance of tidal activity, meteorological vents and coastline changes to water circulation in Kingston Harbour. Jamaica Institute of Environmental Professionals 1st Conference of the Environment.
- Webber MK, Webber DF, Ranston E, Dunbar F, Simmonds R & Galbraith A (2003). Changes in Kingston Harbour after 20 years of continued eutrophication: identification of monitoring tools for efficient management. Jamaica Institute of Environmental Professionals 1st Conference of the Environment.

Proceedings of Sixth Conference of The Faculty of Pure and Applied Sciences, The University of the West Indies, Mona (March 18-20, 2003). ISBN 976 41 0087 2.

- Bennett CE, DeSalle R & Wilson BS (2002). “Preliminary review of the population structure of an exotic invasive carnivore, *herpestes javanicus*, in the West Indies”.
- Bennett K-A.L & Hyslop EJ (2003). “A study of the taxonomy of *Gambusia* spp. Poey 1854 in Jamaican rivers using molecular and morphological techniques”.
- Cohen JE & Hutton DG. (2003) “Herbicidal effectiveness of three household disinfectants – preliminary findings”.
- D’Andrea ME & Hyslop EJ (2003). “A survey of the freshwater fauna of the Cockpit country, Jamaica”.
- Fender AB & Hyslop EJ (2003). “Evaluation of the benthic macroinvertebrate fauna of the Rio Cobre and selected tributaries with special emphasis on the family Thiaridae”, *Gastropoda*.
- Lawson CA & Hyslop EJ (2003). “Selected factors affecting the benthic macroinvertebrates of the lower Rio Minho”, *Clarendon*.
- Leiba NS & Hyslop EJ (2003). “The effects of a salinity gradient on benthic macroinvertebrates in Spanish and Buff Bay rivers and the recovery of these organisms from major flooding and dredging events”.
- Martin TR, Wolf K & Hyslop EJ (2003). “Habitat partitioning and radular structure of *Neritina punctulata*, Bussu, in two Portland rivers”.
- McKoy S, Hyslop EJ & Robinson RD. “Digenean trematodes at the Mona Reservoir with special emphasis on *Thiara granifera* (prosobranchia)”.
- Montague K & Hyslop EJ (2003). “The effect of urban and agricultural impacts on macroinvertebrate communities in the upper Rio Minho”.

- Powell M, Wheatley A, Tennant P, Omoruyi F, Asemota H, Gonsalves D, Morrison, E & Ahmad MH (2003). “Effects of consumption of transgenic papaya (*Carica papaya* L.) on rat intestinal disaccharidases”.
- Roberts M, Minott D, Tennant P, Jackson-Maite J & Gonsalves D (2003). “Comparative evaluation of transgenic and nontransgenic papaya (*Carica papaya* L.) fruit developed for the control of Papaya ringspot virus in Jamaica”.
- Todd SR, Warner GW & Hyslop EJ (2003). “The impact of the introduced red-claw crayfish *Cherax quadricarinatus* (von Martens 1868) in two Jamaican rivers”.
- Townsend S, Maxam AM & Webber DF (2003). “The dispersal of phytoplankton in and along coastal embayments, hellshire coastline, St. Catherine Jamaica”.
- Waugh CA, Lindo JF, Cunningham-Myrie C, Eberhard M & Robinson RD (2003). “Angiostrongylus infections in rats and snails in Jamaica”.

PUBLICATIONS

Refereed

- * Aiken KA, Morris D, Hanley FC & Manning R. (2003). Aquaculture in Jamaica. *Naga, World Fish Centre Quarterly* 25 (3): 10-15.
- * Lindo JF, Waugh CA, Hall J, Cunningham-Myrie C, Ashley D, Eberhard M, Sullivan JJ, Bishop HS, Robinson DG, Holtz, T & Robinson RD (2002). Enzootic *Angiostrongylus cantonensis* in rats and snails, following an outbreak of human eosinophilic meningitis, Jamaica. *Emerging Infectious Diseases* 8(3): 324-326.
- * Mansingh A, Robinson DE & Dalip KM (2003). Use, fate and ecotoxicity of pesticides in Jamaica and the Commonwealth Caribbean. In *Pesticide Residues in Coastal Tropical Ecosystems*. Eds. M. D. Taylor, S. J. Klaine, F. P. Carvalho, D. Barcelo and J. Everaarts. Pub. Taylor and Francis; London and New York. ISBN 0-415-23917-6. p 425 - 463.

- * McLaren KP & McDonald M. (2003). Coppice regrowth in a disturbed tropical dry limestone forest in Jamaica. *Forest Ecology and Management* 180: 99-111
- * McLaren KP & McDonald M (2003). Seedling dynamics after different intensities of disturbance in a tropical dry limestone forest in Jamaica. *Journal of Tropical Ecology* 19: 567-578
- * McLaren KP & McDonald, MA (2003). The effects of light and moisture on seed germination and seedling survival in a Tropical Dry Forest in Jamaica. *Forest Ecology and Management* 183: 61-75
- * Robinson DE, Henry C & Mansingh A. (2002). Ecotoxicity studies in Jamaican environment. II. Toxicity, bioaccumulation, elimination and tissue partitioning of dieldrin by the shrimp, *Macrobrachium faustinum*. *Environmental Technology* 23 (11) 1275-1284.
- * Tennant P, Ahmad MH & Gonsalves D (2002) Transformation of *Carica papaya* L. with viruscoat protein gene for studies on resistance to *Papaya ringspot virus from Jamaica*. *Tropical Agriculture (Trinidad)* 79: 105-113
- * Vaidya KR & Jain SK (2002). Genetic variation in amaranth landraces from India. *Journal of Genetics and Breeding* 56: 193-204.

Non-refereed

- * Vogel P (2002). West Nile Virus has arrived in Jamaica – birds likely to be the primary victims. *Broadsheet BirdLife Jamaica* 79: 10-14.

Articles

- * Robinson RD (2002). What to Look for Under the Sea. In: A Tapestry of Jamaica. *Macmillan Caribbean Publishers*. 5pp.
- * Tennant P (2003) Agricultural Biotechnology: Overview of public perception. In: *The Gleaner*. Thursday, February 13, 2003, pp B6
- * Tennant P (2003) Crops of Agricultural Biotechnology (part 2). In: *The Gleaner*. Thursday, February 6, 2003, pp D12

- * Tennant P (2003) Crops of Agricultural Biotechnology: Safety questions and answers. In: *The Gleaner*. Thursday, January 30, 2003, pp B4
- * Tennant P (2002) Agricultural Biotechnology in 2001: A review. Faculty of Pure and Applied Sciences Newsletter, 14 (4): 10
- * Tennant P (2002) Crops of Agricultural Biotechnology: How are they developed? In: *The Gleaner*. Thursday, November 7, 2002, pp B10
- * Tennant P (2002) Crops of Agricultural Biotechnology: Just the RoundUp ready soybean? In: *The Gleaner*. Thursday, May 2, 2002, pp D8

PUBLIC SERVICE

Mr Karl Aiken

- Member, Board of Directors, Caribbean Coastal Area Management Foundation
- Member, Scientific Authority, Convention and International Trade in Endangered Species of Flora & Fauna, Jamaica
- Member, Fisheries Advisory Committee, Fisheries Division, Ministry of Agriculture

Dr Jane Cohen

- Advisor, Banana Board Research Department

Dr Eric Garraway

- Member, Advisory Board of Natural History Division, Institute of Jamaica
- Member, Butterfly Conservation Board, NEPA.
- Member, Scientific Authority
- Caribbean Representative, Association of Tropical Lepidoptera

Dr Dwight Robinson

- Chair, Technical Committee, National Pink Mealybug Task Force, Ministry of Agriculture

- Chair, Technical Advisory Committee, Biological Control of Coffee Berry Borer, Caribbean Agriculture Research Development Institute.
- Technical Advisor, Efficacy of Biorationals against Coffee Berry Borer, Coffee Industry Board, Jamaica

Dr Ralph Robinson

- Member, Board of Directors, Jamaica Agricultural Development Foundation.

Dr Dunbar Steele

- Chairman, Academic Committee, The Caribbean Maritime Institute
- Member, Board of Directors, Caribbean Maritime Institute

Dr Kisan Vaidya

- Member, Gene Bank Committee, Jamaica

Dr Peter Vogel

- Member of Board, Scientific Authority
- Chairman, Jamaican Iguana Research and Conservation Group
- Member, Alien Invasive Species Working Group
- Member, IUCN West Indian Iguana Specialist Group
- Member, Executive Committee BirdLife Jamaica
- Member, NRCA Game Bird Committee
- Member, Scientific Advisory Committee, Blue and John Crow Mountains National Park

Dr Dale Webber

- Member, Editorial Board of the Jamaica Institute of Environmental Professionals National Scientific Conference on the Environment
- President, Mona Preparatory School Parent Teachers Association

- Member, Editorial Board of the Jamaican Journal of Science and Technology
- Chairman, CL Environmental Company Limited
- The University of the West Indies Representative on Ministry of Education and Culture Overseas Examination Board
- Member, Operations Sub-Committee, Overseas Examination Board
- Member, Science and Technology Advisory Committee of the National Commission for UNESCO

Dr Mona Webber

- Advisor, Institute for Excellence in Environmental Education
- Member, Steering Committee, Sea Turtle recovery Network, Hope Zoo
- Associate, Harbor Branch Oceanographic Institute

CATEGORIES OF STUDENTS

Undergraduate

A breakdown of Bachelor of Science degrees:

First Class Honours	2
Upper Second Class Honours	17
Lower Second Class Honours	14
Pass	2

Performance in courses:

Course Code & Name	No. Reg	No. Sit	No. Pass	% Pass
BB10A Cells, Biomolecules and Genetics	231	229	179	77
BB10B Introductory Microbiology	236	231	198	84
BL05A Preliminary Biology I	153	148	122	80
BL05B Preliminary Biology II	135	133	94	70
BL10L Animal Diversity	122	120	107	88
BL10M Plant Diversity	136	134	130	96
BL20M Mycology	11	11	10	91

BL20N	Ecology	61	61	60	98
BL20J	General and Molecular Genetics	44	43	43	98
BL20K	Population Genetics & Evolution	63	62	62	98
BL20L	Diving Technology for Aquatic Scientists	5	5	5	100
BL31A	Coastal Management	21	21	21	100
BL31E	Biological Oceanography	23	23	23	100
BL31F	Marine Benthic Communities	22	22	22	100
BL33D	Freshwater Ecology	25	25	23	92
BL38A	Virology	15	15	14	93
BL39A	Statistics for Biologists				
BL39C	Research Project	6	4	4	67
BL39D	Caribbean Biodiversity	22	22	20	91
BL39E	Conservation Biology	16	15	14	88
BT21A	Biology of Lower Plant Groups	13	13	11	85
BT21B	Seed Plants	44	44	40	91
BT22A	Plant Physiology	28	28	28	100
BT31A	Phycology	9	9	9	100
BT31C	Biology of Coastal Plant Communities	14	13	11	79
BT33A	Ecology, Agroforestry and Sustainable Development	13	13	11	85
BT34A	Principles of Plant Breeding	9	9	9	100
BT37Q	Plant Health				
BT38B	Plant Biotechnology	9	9	9	100
Z20C	Functional Organization of Animals	62	62	58	94
Z30A	Sensory and Neuromuscular Physiology	20	20	20	100
Z30B	Metabolic Physiology	14	14	14	100
Z30G	General Parasitology	20	19	14	70
30M	Immunology	27	26	24	89
Z31C	Fish Biology	12	12	12	100
Z31F	Fisheries & Aquaculture Technology	9	9	9	100
Z32C	Insect Biology & Systematics	8	7	7	88
Z32G	Pest Management	12	12	12	100

Prizes Awarded

The following students were formally recognised for quality academic performance:

Preliminary Biology	Rosanna Maria Chen
Introductory Biology	Anika Djenba Mitchell Marc Errol Phillpotts
Level II Zoology	Shaun Marie Wilson
Lloyd B. Coke Prize (Plant Physiology)	Shaun Marie Wilson
The Vincent Hugh Wilson McKie Prize in Zoology	Tamika Patrice Valentine

Graduate student registration:

MPhil program	38 full time; 25 part time
PhD program	7 full time; 4 part time

Award of Higher Degrees

MPhil Botany

Shakira Azan	Supervised Dr Dale Webber
Josette LaHee	Supervised by Dr Eric Hyslop and Dr Dale Webber
Lois Morgan	Supervised by Dr Jane Cohen

MPhil Zoology

Kimberly John	Supervised by Dr Eric Hyslop and Dr Dale Webber
Andrea Fender	Supervised by Dr Eric Hyslop
Alison Watson	Supervised by Dr Eric Garraway

Cesna McCain	Supervised by Dr Mona Webber
Leo Douglas	Supervised by Dr Peter Vogel
Delano Lewis	Supervised by Dr Peter Vogel
Sharon McDonald	Supervised by Prof. Ajai Mansingh
Keisha Singh	Supervised by Dr Ralph Robinson

DISTINGUISHED VISITORS

Prof. J. Wilkens, University of Calgary, Canada

Dr Coastas Zachariades, Agricultural Research Council of South Africa

Ms Lorraine Strathie, Agricultural Research Council of South Africa

Ms Alana den Breeyen, Agricultural Research Council of South Africa

Mr. Stuart Reeves, Principal, Jamaica College

Mr. Radley Reid, Headmaster, Champion College

Dr Fred Hanley, Jamaica Broilers Group

Mr Carlos Browne, Ministry of Education Programme Monitoring & Evaluation

Dr Joe Lindsay, Chairman, Jamaica Organic Agriculture Movement

Mr Leo Wilson, Ridge to Reef Programme

Mr Sataya N. Nadan, Secretary General, International Seabed Authority

Ms Tracy Commock, Institute of Jamaica

Dr. David Smith, United Nations Development Programme.

Ms Chanda Bennett, Columbia University, New York

Dr Scott Michael, Tulane University, New Orleans, USA

Mr Dino Ferri, Audubon Zoo, Nashville, USA

Mr Dale McGinnity, Nashville Zoo, Nashville, USA

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

Professor Mervyn Curtis, BSc *Leics*, PhD *Nott*
– Head of Department

WORK OF THE DEPARTMENT

During the year Dr Nickolai Dokuchaev, Mr Horace Jones and Professor Han Reichgelt left the Department. Mr Samuel McDaniel went to the United States of America to carry out a PhD in Biostatistics. Ms Patryce Allen and Mr Timothy Stitt joined the Computer Science section.

Sadly in January 2003 **Professor John Lodenquai** died. Shortly after John's death **Professor Mervyn Curtis** took up the headship.

During the year a new **BSc in Computer Science** programme was presented and accepted for implementation. This new programme will seek accreditation from the British Computer Society to give international status to our degree

Professor Geoffrey Grimmett, Head of the Department of Pure Mathematics and Statistics at the University of Cambridge in the UK came to carry out a review of the Mathematics section and produced a report which is currently being implemented.

STUDENT MATTERS

The Department had an enrolment of 1655 undergraduates in mathematics and 1297 undergraduates in Computer Science. There were 15 MPhil/PhD students within the Computer Science section and 2 MPhil/PhD students within the Mathematics Section.

RESEARCH IN PROGRESS

Dr D Coore

- Amorphous Computing: simulation techniques, parallel language design and algorithm design and implementation.
- Cardiac surgeon trainer.

Prof. M Curtis

- A cricket batting analysis/training system.
- A physiological monitoring system for cricketers.
- Visualisation through obscuration noise using the n-tuple technique.
- A virtual cricket ground: a mixed reality environment.
- A virtual Jamaica
- Face recognition using Fractals

Dr R McEachin

- Problems related to Schur multiplication

Dr E Mugisa

- Re-usable software

PAPERS PRESENTED

Dr D Coore

- (with Michael Craven, Somara Newman, Maurice Fletcher, Brian Silvera, Neil Forbes, Paul Ramphal), “Cardiac training simulator using pump with electronic pressure sensor to trigger ventricular fibrillation”, IEEE SouthEastCon, April 2003
- (with Dean Holness, Richard Lawson, Howard Nation), “Design and Implementation of A Simulator for An Amorphous Computing Environment”, SouthEastCon, April 2003

Prof K M Curtis

- (with Neil G), “A Hybrid Fractal/DCT Image Compression Method”, IEEE 14th International Conference on Digital Signal Processing, July 2002.

- (with J.D. Burniston), “A Hybrid Neural Network/Rule-Based Architecture for Analogue Function Approximation”, IEEE SouthEastCon, April 2003
- (with M.G. Kelly, and M.P. Craven), “Fuzzy Recognition of Cricket Batting Strokes Based on Sequences of Body and Bat Postures”, IEEE SouthEastCon, April 2003

Dr K. Mugisa

- “A Reuse Triplet View of UML”, IEEE SouthEastCon, April 2003

Dr A Rodkina

- (with O'Neil L). Almost Surely Bondedness of Solution to Modified Stochastic Approximation Procedure. Sixth Conference of a Faculty of Pure and Applied Science. UWI. Mona, March 18-20, 2003. P.31.
- (with Nosov V). On Stability of Stochastic Delay Cubic Equations. Fourth International Conference on Dynamic Systems and Applications, May 21-24, 2003, Morehouse College, Atlanta, USA. pp. 27-28.
- On Stability of Stochastic Non-Autonomous Nonlinear Systems with Delay}. The International Conference on Differential Equations “Equadiff 2003”. Hasselt, Belgium, August 22-26, 2003.

PUBLICATIONS

Prof K M Curtis

- * (with Kelly M, and Craven M P), “Fuzzy Sets and Cricket Batting”, Recent Advances in Simulation, Computational Methods and Soft Computing, Electrical and Computer Engineering Series, Edited by N E Mastorakis, WSEAS Press, ISBN 9608052505, 2002, pp 203-207.

Dr A Rodkina

- * (with Nosov V). On Stability of Discrete Kiefer-Wolfowitz procedures. Functional Differential Equations. Vol. 9, No 3-4, 2002, pp. 577-593.

- * On Stabilization of Hybrid Stochastic Equations. Dynamics of Continuous, Discrete and Impulsive Systems. Series A: Mathematical Analysis. Watam Press. Vol. 10, No 1-3. 2003. pp. 117-126.
- * On Stability of Stochastic Nonlinear Systems. In the book of Abstracts of The International Conference “Kolmogorov and Contemporary Mathematics”. Moscow, Russia, June 16-22, 2003. pp. 534-544.
- * On Asymptotic Normality of Generalized Discrete Robbins-Monro Approximation Procedures. Proceedings of The International Conference “Modern Problems of Functional Analysis and Differential Equations”. Voronezh, Russia, June 30-July 4, 2003, pp. 26-44.

Mr T Stitt

- * (with Scott MP, Scott NS and Burke PG), “On the single differential cross section for electron impact ionization of atomic hydrogen near threshold.”, J.Phys.B:At.Mol.Opt.Phys. 35 L323-L329 (2002) ISSN 0953-4075
- * (with Bartschat K, Scott MP, Burke PG, Scott NS, Grum-Grzhimailo AM, Riordan S, Ver Steeg V and Strakhova T I), “Convergence of the energy-differential ionization cross sections obtained from a T-matrix approach with R-matrix wavefunctions.”, Phys. Rev. A65, 062715-1:6 (2002) ISSN 1094-1622
- * (with Scott N Stan, Scott M Penny and Burke Phil G), “2-D R-matrix propagation: a large scale electron scattering simulation dominated by the multiplication of dynamically changing matrices”, High Performance Computing for Computational Science:VECPAR 2002, JMLM Palma et al (Eds), Lecture Notes in Computer Science 2565, p354-367 (2003) ISSN 0302-9743 ISBN 3-540-00852-7
- * (with Scott NS, Scott MP and Burke PG), “2-D R-matrix propagation: a large scale electron scattering simulation dominated by the multiplication of dynamically changing matrices”, VECPAR 2002 5th International Meeting on High Performance Computing for Computational Science, Conference Proceedings Vol III, p617-630, Portugal, (2002)

- * (with Scott M P, Scott NS and Burke P G), “Electron impact ionization using an R-matrix approach”, Proceedings of the International symposium on $(e,2e)$, Double Photoionization and Related Topics and the XI International Symposium on Polarization and Correlation in Electronic and Atomic Collisions, Rolla, Missouri (July 2001), AIP Conference Proceedings 604, Correlations, polarization, and Ionization in Atomic Systems, Eds D H Madison and M Schultz, 604 (2002) 82-89 (ISSN 0-7354-0048-2)
- * (with Atkinson M, “Restricted permutations and the wreath product” Discrete Math. 259 (2002), 19-36.
- * (with E. J. Kontoghiorghes) Handbook of Parallel Computing and Statistics.
- * Statistics: Textbooks and Monograph Series, December 2002. Marcel Dekker, Inc.

Dr WB Zhang

- * “A Central Limit Theorem of the Distinct Degrees of Prime Factors in Additive Arithmetic Semigroups”, Number Theory for the Millennium, Proceedings of the Millennium Conference on Number Theory, M A Bennett et al Eds, Vol III, A K Peters, 2002, 437-450.
- * “Probabilistic Number Theory on Additive Arithmetic Semigroups”, III, Ramanujan Journal, 6, 2002, 387-428.
- * “Mean-value Theorems for Multiplicative Functions on Additive Arithmetic Semigroups via Halsz's Method”, Monatsh, Math, DOI, 10.1007, 2002, 1-35.

DEPARTMENT OF PHYSICS

Donald Walwyn, BSc, PhD *UWI* – Head of Department

WORK OF THE DEPARTMENT

Teaching

The re-organised curriculum for the undergraduate programme was fully implemented, with the teaching of the full complement of level 3 four-credit courses. The additional flexibility – arising from the change from 8 to 4-credit courses resulted in increased overall enrolment in the Department's advanced level courses.

The general pass rate for the undergraduate courses was satisfactory. The student assessment was good or satisfactory for all but one course.

The death of **Professor John Lodenquai** resulted in significant dislocation in the Department's teaching programme in the second semester. A second semester level 3 course, which is a compulsory component of the General Physics Major, had to be cancelled. A special waiver was obtained from the Board for Undergraduate Studies to substitute any non-compulsory level 3 Physics or Electronics course in its place for affected students.

Research

The Department's research activities continued to be led by the work of the Climate Modeling Group. The Group continued projects involving (i) The Threat of Dengue Fever - Assessment of Impacts and Adaptation to Climate Change in the Caribbean, (ii) Diagnostics and Prediction of Climate Variability and Human Health Impacts in the Tropical Americas, (iii) Developing the Caribbean El Nino News Network - CENNN and (iv) The structure and properties of synoptic systems that affect the Caribbean.

Research directed at developing solutions for GPS tracking, based on features of the GSM cellular network, operating in Jamaica, became more focused – concentrating on innovative approaches to error correction. The GPS Group won award for “Best Technological Display” at IRAE Exposition and Conference, NCU, Mandeville, April 2003 and the Group participated in the Exposition at the IEEE Conference, Ocho Rios, April 2003.

RESEARCH IN PROGRESS

Dr. A Amarakoon and Mr. V. Douse

- Investigation of skid resistant aggregates occurring in Jamaica.

Dr. A. Amarakoon and Miss J. Minott

- Work is continuing on Enso effects on sugar cane yields in Jamaica
- Digital maps have been produced to give wind speed and power capabilities for the island. The work is being expanded to give greater detail.

Prof. A. Chen and Mr. T. Hall

- The investigation of the downscaling of northern Caribbean seasonal rainfall.

Prof. A. Chen, Dr. S. Rawlins, Miss C Rhoden and Miss R Stennett

- Climate and Epidemiology data are being studied to detect linkage between climate and dengue fever.

Prof. A. Chen and Ms. T. Stephenson

- The IAI project on Analyzing and Understanding Climate Variability in the Caribbean Islands

Dr. L. Myers and Miss D. Field

- Investigating the suitability of available photovoltaic technology to the Jamaican environment.

Dr. L. Ngalamou and Mr. L. Buchanan

- The development of software tools for the design of Programmable Logic Controllers

Dr. L. Ngalamou and Mr. C. Donaldson

- The design of a Petri Nets-to-Fuzzy Sets conversion for Discrete Event Systems.

Dr. L. Ngalamou and Mr. D. Emanuel

- The analysis and synthesis of VHDL core libraries for a high-speed power line transceiver

Dr. J. Skobla

- Improving the accuracy of the GPS system by using Jamaican map software and experimental data.

Dr. J. Skobla and Mr. A. Young

- Development of GPS micro-tracking System using SMS cellular work was completed. The system is under final field test for use under local conditions.

Dr. J. Skobla, Messrs L. Clarke, C. Scarlett and R. Turner

- Cellular based error correction system

Dr. M. Taylor

- The inter-annual variability of Caribbean climate is being investigated with an emphasis on determining the primary forcing factors which drive/cause change

Dr. D. Walwyn, Miss Y. Barrett and Miss K Munroe

- Investigating the application of orthogonal frequency division multiplexing (OFDM) to broadband wireless access problems in the Jamaican environment.

Dr. D. Walwyn and Mr. M. Ebanks

- The propagation of microwave transmissions inside buildings

PAPERS PRESENTED

- **Christopher Donaldson, Lucien Ngalamou, Leary Myers,** “Combining Petri nets and Fuzzy Sets for Discrete-Event Controllers Design”, IEEE Southeast conference, April 2003, Ocho Rios Jamaica

- **Leotis Buchanan, Lucien Ngalamou, Leary Myers**, “Constraint Based Ladder Diagram Editor”, IEEE Southeast conference, April 2003, Ocho Rios Jamaica
- **M Ponnambalam**, “Energy from an under-utilized Source”, American Association of Physics Teachers Meeting, Boise, Idaho August 2002.
- **M Ponnambalam**, “Damping effect on the Period of a Pendulum”, Inter-American Conference on Physics Education, Havana, Cuba, July 2003
- **M Ponnambalam**, “Teaching Symmetry's Usefulness in Introductory Physics”, Inter-American Conference on Physics Education, Havana, Cuba, July 2003.
- **M Ponnambalam**, “Physics and the Arts”, Inter-American Conference on Physics Education, Havana, Cuba, July 2003.
- **Tannecia Stephenson, Anthony Chen**, “Climate variability in the Caribbean Islands”, Latin American and Iberian Congress of Meteorology, Havana, Cuba, March 2003
- **Albert Owino, Anthony Chen, Michael Taylor**, “The role of Southwestern Caribbean in the Formation of Tropical Storms in the Caribbean Basin”, Latin American and Iberian Congress of Meteorology, Havana, Cuba, March 2003
- **Anthony Chen**, “Pilot Project for Predicting and Mitigating an Outbreak of Dengue Fever”, 1st Latin American and Caribbean Regional (AIACC) Workshop, San Jose, May 2003.
- **Lawrence Brown, Anthony Chen, Albert Owino**, “Statistical Downscaling”, 1st Latin American and Caribbean Regional (AIACC) Workshop, San Jose, May 2003.
- **Rainaldo F. Crosbourne, Michael A. Taylor, A.M.D. Amarakoon**, “Developing a Caribbean Climate Interactive Database”, 1st Latin American and Caribbean Regional (AIACC) Workshop, San Jose, May 2003.
- **Anthony A. Chen, Michael A. Taylor, Rainaldo F. Crosbourne, Samuel C. Rawlins, Karen Polson, Wilma Bailey, Charmaine Thomas-Heslop**, “Epidemiology Patterns of Dengue in the Caribbean under Climate Change”, 1st Latin American and Caribbean Regional (AIACC) Workshop, San Jose, May 2003

- **Scarlett C., Clarke L., Turner R., and Skobla J.**, “Cellular Based GPS Error Correcting System”, XVII IMECO World Congress, Metrology in 3rd Millenium, Dubrovnik, Croatia, TC1, pp 83-86, June 22-27, 2003.
- **Young A. and Skobla J.**, “The Universal Preprocessing GPS-SMS Communication Unit for the AVL System”, The Sixth Conference Faculty of Pure and Applied Sciences, UWI, Mona, March 18-20, 2003.
- **Scarlett C., Clarke L., Turner R., and Skobla J.**, “GPS Tracking System with Error Correction”, Poster P-60, The Sixth Conference Faculty of Pure and Applied Sciences, UWI, Mona, March 18-20, 2003.
- **McFarlane G. and Skobla J.**, “UWI System Can Improve Safety for the Fishing Industry In Jamaica”, Poster _-1, The Sixth Conference Faculty of Pure and Applied Sciences, UWI, Mona, March 18 - 20, 2003.

PUBLICATIONS

Refereed

- * **Young A. and Skobla J.**, “Preprocessing Communication Unit with Short Message Service Communication Channels for AVL Tracking”, SPIE Proceedings. Location Services and Navigation Technologies, vol. 5084, pp 86-00, 2003.
- * **Young A. and Skobla J.**, “Robust GPS-SMS Communication Channel for the AVL System”, IEEE Proceedings, AEROSPACE, vol. 4, pp. 1957-1966, 2003.
- * “GPS-Based Marine Vessel Tracking Device”, McFarlane G. and Skobla J., IEEE Proceedings, AEROSPACE, vol. 4, pp. 1605-1610, 2003.
- * **Young A. and Skobla J.**, “SMS TCP/IP Interface”, AEROSPACE, vol. 4, pp. 1597-1604, 2003.
- * **A. M. D. Amarakoon A. A. Chen**, “Modelling of Wind Speed and Power across Jamaica”, *Jamaican Journal of Science and Technology* 12 & 13 (2003): 48-64.

- * **Taylor M. A., D. B. Enfield and A. A. Chen**, “The Influence of the tropical Atlantic vs. the tropical Pacific on Caribbean Rainfall”, *Journal of Geophysical Research*, 107(C9) 3127, doi:10.1029/2001JC001097.
- * **Peterson T. C., M. A. Taylor, R. Demeritte, D. L. Duncombe, S. Burton, F. Thompson, A. Porter, M. Mercedes, E. Villegas, R. Memexant Fils, A. Klein Tank, A. Martis, R. Warner, A. Joyette, W. Mills, L. Alexander, B. Gleason**, “Recent Changes in Climate Extremes in the Caribbean Region”, *Journal of Geophysical Research*, 107(D21) 4601, doi:10.1029/2002JD002251. Caribbean Region.

PUBLIC SERVICE

Dr. P. Chin

- Vice-Chairman, Appliance Testing and Labelling Committee, Jamaica Bureau of Standards
- Moderator, Physics CXC
- Member, Physics Panel, CAPE Examinations

Dr. J. McTavish

- External Examiner, Physics, Joint Board for Teacher Education

Dr. L. Myers

- Member, Board of Spectrum Management Authority
- Member, Board of Scientific Research Council

Dr. L. Ngalamou

- Campus Advisor, University College and Apostolic Ministry (UCAM)
- Coordinator, Computer Technology Training Programme, MIAS

Dr. M. Taylor

- Member, Caribbean Climate Forum Steering Committee

Dr. D. Walwyn

- Jamaica's representative, Commonwealth Telecommunication Council

Research Grants

- Grant of Microcontroller Development Systems – (Complete Lab Equipment for a new course – Microcontroller Application) from Atmel Inc. (valued at J\$300,000)
- Grant of Computer hardware and software for GPS project from Ericsson Inc. (valued at J\$500,000)

CATEGORIES OF STUDENTS

Undergraduate:

Course	No. sat exam	No. passed	Pass %
P04A Preliminary Physics A	75	61	81
P04B Preliminary Physics B	79	54	68
P14A Introductory Physics A	107	73	68
P14B Introductory Physics B	102	74	72
P23E Modern Physics 1	18	12	67
P23F Optics & Oscillations	19	16	84
P23H Electricity & Magnetism & Solid State Electronics	16	13	81
P24F Signals and Systems	52	41	79
P24G Electric Circuit Analysis	21	16	76
P24H Communications Systems	43	42	98
P24J Analog Electronics	18	14	78
P24K Digital Electronics	49	36	73
P24L Solid State Electronic Devices	30	25	83
P25F Materials Science 1	13	12	92
P33F Astronomy & Astrophysics	13	11	85
P33G Physics of Climate	19	13	68
P33H Fluid Dynamics and Renewable Energy			
P33J Electromagnetism and Solid State Physics	7	4	57
P34F Digital Signal Processing	31	28	90
P34G EM Transmission and Propagation	15	15	100
P34K Microprocessors	28	25	89
P34H Digital Communications	29	24	83
P34J Microcontroller Applications	17	16	94
P34L Instrumentation	22	20	91
P34P Electronics Project	16	15	94

First Class Degrees with Majors in Electronics and/or Physics were awarded to Mr. Godfrey Bernard, Ms Antoinette Heirs and Ms. Kahena Munroe.

Postgraduate

Three postgraduate students completed their MPhil degrees. They are:

Tanya Innis whose title was Development of Thin Film Electrical Resistance Sensors for Corrosivity Monitoring in Jamaica. Her Supervisor was Dr. Leary Myers.

Ricardo Paharsingh's, thesis was titled Hardware Wavelet Synthesis Cores for Image Data Compression and Decompression. His Supervisor was Dr. Lucien NGalamou.

Jacqueline Spence's thesis was the Effect of Concurrent Sea Surface Temperature Anomalies on Caribbean Rainfall and her Supervisor was Dr. Michael Taylor.

Nineteen (19) students were awarded the degree of MSc in Digital Technology

Prizes Awarded:

The Departmental Prizes for academic performance in Level 2 courses were awarded to Mr. Godfrey Bernard and Ms. Kahena Munroe.

The Departmental Prize for academic performance in Level 1 courses was awarded to Mr. Cecil Reid.

The Francis Bowen Bursary for Physics was awarded to Ms. Antoinette Heirs.

The Michael Tharmanahthan Memorial Bursary was awarded to Ms. Jody-Ann Minott.