SOIL EROSION, SLOPE STABILITY AND WATERSHED MANAGEMENT

On Saturday 4th May 1991, a small group of JGS members participated in a thought-provoking field trip into the Hope River Watershed and Hermitage Dam catchment. The purpose was to examine aspects of erosion control and watershed management. The morning’s activities were led by Mr Murray and Mr Walker, technical staff at the Hope River Watershed Project (HRWP). In the afternoon, Russell Maharaj, a JGS member and postgraduate student of the Geology Department, UWI, led the group, and focussed on two themes: slope stability on vegetated hillsides, and sedimentation in the Hermitage reservoir.

Mr Walker took the group to a number of sites along the Papine to Content Gap and Irish Town main roads, where the HRWP has constructed various erosion control structures. At the first stop, we were shown how a badly eroded footpath to a primary school had been protected and widened along a gully side. The main construction technique involved the use of gabion baskets. The gabion basket consists of a strong wire mesh frame which is expertly packed with rocks and stones. Gabion baskets, when properly sited and aligned together are a strong, stable and effective erosion control measure. In this particular case, gabion baskets had been packed with top soil and were being recolonised by vegetation.

At other sites, the HRWP had constructed check dams to help control gully erosion. A series of check dams, built across a gully, trap sediment and, by slowing water velocity, reduce its erosive power during heavy rainfall. Check dams help provide employment for local people whilst being constructed. Masonry check dams have become very expensive due to high cement prices, so the HRWP have constructed check dams from gabion baskets, old discarded tyres and lumber from hurricane-damaged utility poles.

The HRWP has been in existence since January 1988, but unfortunately its future is in doubt owing to funding uncertainties. Its activities have also included demonstration soil conservation measures for small farmers, and community education programmes to inform rural people about soil erosion and conservation, and to discourage the uncontrolled use of fire and indiscriminate clearing and burning. The HRWP, in conjunction with the UWI Pesticides Group led by Dr A. Mansingh (Zoology Department) is also monitoring water quality in the project area’s streams.

In the afternoon, Russell Maharaj posed the question why slope failures (landslides and slumping) occurred on vegetated hillslopes, sometimes even in undisturbed primary forest. Roots of plants and trees are supposed to bind the soil together and stabilise a slope.

The party visited a number of his research sites where the mechanism of slope failure on vegetated slopes was graphically illustrated. Plant root systems only bind the upper portion of soil in which roots grow. Below is a depth of soil without any plant roots. These two layers of soil (with and without roots) have different shear strengths, the lower layer being weaker because of the absence of root systems to bind the soil. This condition is called mechanical anisotropy. The boundary between this upper and lower layer is a highly unstable interface, and can act as a plane along which slippage, sliding and slumping occurs during torrential rain. Such slope failures are not confined to shallow rooting grasses, but do occur in areas of bamboo clumps and larger trees with extensive rooting systems including tap roots.

Later, the party visited Hermitage Dam, the beautiful site of Jamaica’s largest reservoir. Built in the 1930s, Hermitage reservoir presently has low water levels which have starkly exposed the silt and sediment in the reservoir, a problem which, over the years, has significantly reduced the storage capacity of the reservoir. The group inspected the sedimentation caused by the Liver River at its entry point into the reservoir. The deposits included large boulders embedded in the silt, and organic matter (which is harmful to water quality). [continued on next page]
All the participants agreed it was an excellent day out, but were concerned that a highly educational field trip such as this, combining geomorphology, biogeography, agricultural geography and physical planning was so poorly attended by both UWI and 'A' level students.

CULTURAL TALKS

The JGS has an ongoing programme of cultural talks in which staff of Embassies in Kingston are invited to give presentations about their respective countries. There have been two meetings in this occasional series so far.

Soviet Union

On Wednesday, October 24th, 1990, staff of the USSR Embassy gave a talk on the Soviet Union, providing some fascinating background to the current problems facing that country, as well as information on the country's geography, history and its many varied cultures. The event was one of the best attended JGS meetings in many years with standing-room-only in Lab. 2, indicating the interest that the talk aroused amongst UWI and 6th form students. Embassy staff brought with them a large quantity of free books, pamphlets and magazines about the Soviet Union which proved to be very popular with the audience.

Venezuela

On April 25th the Venezuelan Ambassador, the Hon. Victor Carazo, gave an interesting talk on his country's geography and culture. Links between both countries go back to 1815 when Simon Bolivar was in Jamaica for seven months. Under the San Jose Accord, Jamaica imported 2.71 million barrels of crude oil from Venezuela in 1990, which was a decline of 24% over the 1989 imports of 3.36 million barrels. Trade in chemicals and other crude materials in 1989 totalled $5.84 million.

The audience learnt that discussions were underway to reintroduce direct air connections between Venezuela and Jamaica (initially three flights per week), and that discussions were continuing on the proposed smelter plant which would process Jamaican bauxite into aluminium ingots using hydro-electric power from Venezuela.

In elaborating on cultural co-operation the Ambassador noted that the Venezuelan Institute in Kingston offers courses in Spanish, Art and Music as well as a summer programme for children, and JGS members were encouraged to visit.

Venezuela was the first Latin American country to establish a Ministry of the Environment, and this has resulted in the creation of three National Parks and a decrease in some of the negative effects of industrial development.

Given that the JGS was honoured by such a distinguished guest, and the informative nature of his presentation, the low turnout of JGS members was very disappointing.

FIELD TRIP: ALCAN (EWARTON) DRY MUD STACKING

On Saturday, February 23rd a small group of JGS members participated in a field trip to ALCAN's Ewarton plant. The group were led by Mr Wes Sibbles, Public Relations Manager at the plant. The purpose of the visit was a comparative assessment of two different waste disposal systems for red mud.

ALCAN (Ewarton) produces approximately 1300 metric tons of alumina per day using the ' Bayer Extraction Process'. This process uses sodium hydroxide (caustic soda) to dissolve the alumina out of the bauxite at high temperature and pressure in a digester. The end result is a solution, from which alumina is eventually precipitated, and 'red mud' effluent, rich in caustic soda. The red mud is usually disposed of in waste ponds where its extreme alkalinity (pH 11-13) poses a threat to soil, water and air quality.

There are two types of waste disposal systems in use at ALCAN (Ewarton), the wet mud disposal system and the relatively newer system of mud stacking and drying. The wet mud disposal system involves the pumping of the watery red mud (water content 75-80%) into a large sealed elongated karstic faulted limestone depression about four miles north of the plant – the Mount Rosser Mud Lake. There has been clear evidence that contamination of ground and surface waters has occurred, especially north of the mud lake.

Attempts were made to find an alternative disposal system bearing in mind the costs and environmental factors. The dry mud stacking system evolved. This system involves spreading thickened red mud over a sloping, clay-sealed land surface (250 acres) where the mud is allowed to dry by exposure to solar radiation. The liquid fraction gravitates towards the lowest section of the bed, where it is pumped into another sealed area – the settlement and holding pond. Some of this caustic enriched water is recycled into the plant.

Currently, the mud stacking and drying system handles as much as 80-90% of the effluent under normal (climatic) circumstances, with a 10% input to Mount Rosser.

Note – the original pre-Christmas date for this trip had to be rearranged owing to inclement weather – at such times ALCAN temporarily discontinues dry mud stacking, a technique which is based on the use of solar energy.

MAPS FOR SCHOOLS

On 8th November 1990, the first presentations in the JGS's Maps for Schools Project took place. The Project is aimed at providing every school that teaches geography in Jamaica with a Caribbean Wall Map and maps from the new 1:50,000 topographical series, through local business sponsorship. The Portland Chamber of Commerce was the first to respond, and the presentations were made at their Quarterly Meeting in the Port Antonio Marina.

Maps for Titchfield High School were sponsored by Mr Wellington Phillips, those for Happy Grove High School by Mr Boyd Lewis, and for Fair Prospect School the sponsors were General Business Services (through Mr B. Kristensen).

The main address was given by Marjorie Vassall (Min. of Education), who talked about the importance of geography as a school subject, for both personal advancement and national development.
The Geography Teachers Association of Jamaica (G.T.A.J.) has been progressing very well since its inception in 1987. Progress has been made in the areas of teachers’ attendance and participation as well as in field trips and workshops. The focus of the association is to help teachers to become more effective in the classroom, and also to obtain up-to-date information on what geographical changes are taking place in the Caribbean.

For the academic year 1989-1990, the focus was on giving assistance to A Level teachers through the UWIDITE programme as well as introducing them to new textbooks and other materials. These proved to be very beneficial as two of the modules covered in the UWIDITE programme were tested by the 1990 Cambridge examination paper. Teachers reported that there was an improvement in the A Level results for that year.

Attention was also given to the syllabus for Grades 7-9 set by the Ministry of Education. Teachers in the recently upgraded High Schools were assisted in the teaching of areas in which they were not familiar. Experienced teachers gave their assistance at the meetings and assisted Ministry personnel in workshops. During this academic year, teachers had the privilege of a field trip to study coastal geomorphology of the area between Palisadoes and Manchioneal. This trip was subsidized by the Ministry of Education.

For the academic year 1990-91, the emphasis was on the teaching of the C.X.C. syllabus. Two workshops were held. One was focused on the setting and marking of Essay and Multiple Choice questions. The other was focused on Field Studies for the School Based Assessment (S.B.A.) aspect of the syllabus. Attendance at these workshops exceeded 60 teachers from all corners of the island.

During December of this school year, the Ministry of Education and the G.T.A.J. hosted 26 A Level students and 3 teachers from Harrison College in Barbados. These students and teachers went on field trips across the island accompanied by local A level students and teachers. It was a good experience for both our local students and those from Barbados.

The G.T.A.J. field trip for this academic year was a study of the Wag Water River.

At this time we would like to acknowledge a contribution of $200 from the Jamaican Geographical Society which was used to prepare handouts for teachers.

A National Geography Bee competition is now being planned for the 1991-92 academic year.

Angela McCalla
President
Geography Teachers Association of Jamaica
Meadowbrook High School

GEOGRAPHICAL MAGAZINE.
GM is available in bookstores and some supermarkets in Jamaica, priced about $35. The current issue contains a special supplement on Remote Sensing. GM is a beautifully illustrated, topical magazine, ideal for the school library or your own bookshelf. It is published in conjunction with the Royal Geographical Society (see back page).

QUIZ
Name the modern states in which the following places of historical interest are located.
1. Timbuktu
2. Babylon
3. Zanzibar
4. Carthage
5. Troy
6. Alexandria
7. Cuzco
8. Ephesus
9. Jericho
10. Mecca
11. Atlantis
12. Nazareth
13. Pompeii
14. Tyre
15. Meroe

Clue: Five of these places are in Africa

GEOGRAPHY IN THE CARIBBEAN CLASSROOM
The latest issue of Caribbean Geography, Vol 3 No 1 (March 1991) is now available (see back page). A new section, called Geography in the Caribbean Classroom has been added to the journal. It is designed specifically for geography teachers and teachers-in-training. The new section contains regular items:

Updates:
These provide news and concise data in a variety of forms about the Caribbean region.

Textbooks for Caribbean Schools:
An alphabetical listing of all new books and other resource material applicable to the teaching of the geography of the Caribbean, together with short commentaries on some of these books.

Some of the items listed in the current issue include:
Jamaica: A Junior Geography by Marjorie Yassell & Wintle Browne (Heinemann Caribbean) 1991

Practical Skills in Caribbean Geography (Books 1 and 2) by Mike Morrissey & Graham Hart (Longman) 1991

The Bahamas Today: an introduction to the human and economic Geography of The Bahamas by Neil Sealey (Macmillan) 1990

Teaching Methods:
Short articles and briefs written by teachers about their ideas and experiences in the classroom. In the current issue, Neil Sealey (College of the Bahamas) describes some of the problems he has encountered in teaching physical geography to Bahamian students.

Teachers are invited to submit material for the Geography in the Caribbean Classroom section of Caribbean Geography. IGS Members will soon be able to subscribe to Caribbean Geography at a 50% discount. Details to be announced shortly.

Jamaican Geographer (4), May 1991-3
Agricultural Self-sufficiency and the Jamaican Economy

Balfour Spence

Agricultural self-sufficiency is often synonymous with food self-sufficiency and refers to the ability of a society to adequately provide its population with basic food requirements, through domestic production. In this respect assessment of agricultural self-sufficiency represents an analysis of domestic food production and availability. Agricultural self-sufficiency is critical to real development in poor countries such as Jamaica because the ability of a country to feed itself through domestic endeavours is not only of strategic, but also of economic importance. The panic-buying of food by Jamaicans following the recent outbreak of war in the Persian Gulf, and the scramble by the Jamaican Government to implement emergency food plans despite the existence of a Regional Food Plan within CARJCOM, attest not only to the critical importance of food self-sufficiency but also reflect the precarious situation of food and agriculture in Jamaica.

In general, the performance of the agricultural sector over the last two decades has been dismal. The main traditional agricultural exports have experienced an average decline of 20.6% between 1972 and 1989 (Table 1) while a substantial increase in agricultural imports (mainly food) has occurred. The result has been a worsening balance in agricultural trade. In 1989 this balance stood at US $95.4 million. The domestic food situation has been as dissatisfying. Both per capita food production and availability have experienced periods of stagnation and even decline over the last two decades. The gravity of this trend has been exemplified by the fact that over the period Jamaica satisfied only one half of its food demand from domestic sources, so that there has been increased reliance on imported food (see Table 2). If the level of food-aid received by a country indicates worsening domestic food conditions, then Jamaica's situation borders on crisis; in 1988 the FAO ranked Jamaica first among Latin American and Caribbean countries in terms of per capita food-aid receipt.

The persistence of these adverse conditions in Jamaica's agricultural self-sufficiency can be explained by three interrelated sets of constraints which mitigate

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Table 1:
Change in main traditional agricultural exports 1972-1989

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Export (000 tonnes)</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar</td>
<td>276.5</td>
<td>-43.2</td>
</tr>
<tr>
<td>Banana</td>
<td>127.0</td>
<td>-77.9</td>
</tr>
<tr>
<td>Coffee</td>
<td>0.7</td>
<td>+57.1</td>
</tr>
<tr>
<td>Cocoa</td>
<td>3.0</td>
<td>-46.6</td>
</tr>
<tr>
<td>Pimento</td>
<td>2.2</td>
<td>+44.5</td>
</tr>
<tr>
<td>Citrus</td>
<td>13.8</td>
<td>-18.1</td>
</tr>
</tbody>
</table>

Source: Compiled from Economic and Social Survey of Jamaica, 1972 and 1989

Table 2:
Change in imports of main food commodities 1972-1989

<table>
<thead>
<tr>
<th>Category</th>
<th>Import (000 tonnes)</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>95.2</td>
<td>+347.7</td>
</tr>
<tr>
<td>1989</td>
<td>242.6</td>
<td></td>
</tr>
<tr>
<td>Cereals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meat &amp; Fish</td>
<td>36.8</td>
<td>+34.8</td>
</tr>
<tr>
<td>Dairy products</td>
<td>26.9</td>
<td>-3.3</td>
</tr>
</tbody>
</table>

Source: Calculated from Economic and Social Survey of Jamaica, 1972 and 1989

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4-Jamaican Geographer (4), May 1991
against improvements in food production. These constraints can be categorised as (a) institutional constraints, (b) constraints relating to the economy of production, and (c) social constraints.

Institutional constraints relate to the pattern of land resource distribution, the export orientation of production and the biases which exist in the provision of agricultural infrastructure. Agricultural dualism, characterized by large commercial export-oriented farms on the one hand and small subsistence domestic market-oriented farms on the other, is the basis for the inequitable distribution of land resources. Land concentration is the predominant feature of Jamaica's agrarian structure, with small farms (less than 5 ha) accounting for 91.3% of all farms, yet occupying a mere 26.5% of farmland. The relevance of this to food self-sufficiency is that those small farms account for the bulk of domestic food production. In addition, export-oriented production is the focus of many small farms since the insecurity of domestic markets as well as better credit provisions for export crops acts as a deterrent to domestic-oriented production.

Constraints relating to the economy of production focus on the efficiency of landuse among domestic food producers and are highlighted by the high incidence of idle land, even on small farms. Social constraints include attitudes to farming. The long association between small farming and poverty means that most small farmers enter the occupation by default, having aspired to be otherwise.

In conclusion, the precarious and undesirable situation in Jamaica's agricultural self-sufficiency has roots in a historical legacy which continues to promote dualism in all aspects of the agricultural sector.

Balfour has been appointed lecturer in the Geography Department, UWI, for 1990-91 and 1991-92, to cover for staff on sabbatical leave. He is currently registered for a Ph.D at the University of Manitoba.

Editorial: Mechanical anisotropy and mental torpor

A recent JGS field trip (see p1) brought into sharp focus the need for reappraisal of watershed management techniques in the light of changing economic circumstances, and gave a grim reminder (as if it were needed) of Jamaica's environmental malaise.

Time-honoured erosion control methods are becoming hideously expensive. Cost hikes for cement have raised the price of a short stretch of masonry retaining wall along a roadside or hillside to a staggering $40,000-$70,000. Not so long ago, it was possible to build a small house with that kind of money. Cheaper methods are needed, and the Hope River Watershed Project has led the way in utilizing gabion baskets, old tyres and Gilbert-damaged utility poles as erosion control structures in gullies. Even greater savings ought to be possible were the gabion baskets locally-made, as they are in Trinidad, rather than importing them from the USA.

Another time-honoured technique, dredging Hermitage reservoir, has been abandoned, presumably through high costs. Yet sedimentation continues to reduce storage capacity. Surely it is time to try prevention rather than cure? Silt traps on the Wag Water and Liver rivers, near their points of entry into the reservoir could be built at a fraction of the cost of dredging operations. The silt and debris in these traps could be removed by manual labour (but to a place where it would not end up back in the reservoir). These technically simple solutions would not improve storage capacity, but might help prevent further deterioration.

Russell Maharaj's research on landsliding shows that landslides occur on all types of vegetated slopes, including grass, bamboo, and trees and bush. The presence of an unstable interface between soil layers, called mechanical anisotropy (see p1) enhances the potential for landslides. To be sure, hillslope processes are highly complex and involve a multitude of variables: rainfall amount and intensity, slope angle, soil type and parent material, vegetation type and mix, and human disturbance of the natural slope (especially through road construction and house building). And no-one is suggesting that re-vegetation as a technique should be abandoned. But the message is clear: vegetation alone on a steep hillsides cannot ensure slope stability. Areas of shallow rooting grasses, or areas with rooting systems of uniform depth, can themselves create potential problems of instability. There is no panacea for erosion control, the problems of a particular area probably require a combination of techniques that are site-specific.

Jamaica has a dismal track record in watershed management. At best, policy has been sporadic and piecemeal with responsibilities fragmented between different Government agencies so that the task of co-ordination assumes Herculean proportions. Water supply problems are compounded by reduced flow in Jamaica's streams and rivers, a direct result of deforestation and the neglect of Jamaica's watersheds. The future of the HRWP appears uncertain because of the uncertainty of (overseas) funding. Little wonder that dedicated, frustrated technical staff can be enticed away by the seductive career embrace of an insurance company.

Despite the upsurge of interest in the environment, which has stirred collective mental torpor, action is not yet speaking louder than words. Money talks too, and perhaps it will take the recurrent costs of repairing roads damaged by landslides, this time by the May 21/22 rains, to force action. A large proportion of these repair costs are avoidable. Anyone who doubts the urgency of our watershed problems should take a weekend drive through Silver Hill Gap and see for themselves the bleak, treeless wastelands which are fast becoming our heritage. But make sure you go when the roads are not blocked by landslides.

Jamaican Geographer (4), May 1991–5
CONFERENCE

The Department of Geography hosted the International Geographical Union conference on Health and Development between December 10th and 15th, 1990. It formed part of the IGU Commission on Health and Development's international conference programme. Participants came from many parts of the world, including the UK, North America, Belgium, Mauritius, Nigeria, India and Argentina. The British Council sponsored two of the participants.

Two members of the Geography Department presented papers. Wilma Bailey discussed the effects of the integration of the health services in Trinidad and Tobago, and Jeremy Collymore looked at emergency planning in the health sector in the light of the experiences of Hurricanes Gilbert and Hugo.

Several field trips were organised during the conference, including a visit to Port Royal, a tour of the Corporate Area, and a daytrip to the north coast.

GRANT

The Geography Department has received a grant of $267,000 to conduct an interdisciplinary study of the contribution of housing to social and economic development. The study is being funded by the National Housing Trust, the Caribbean Housing Finance Corporation and the Building Societies Association of Jamaica. The research team comprises Anne Lyew-Ayee, Vincent George, Helen Mc Bain and Wilma Bailey.

Recent publications by members of staff


WHERE ARE THEY NOW?

The following list of former full-time lecturers in the Department may be of interest to geography alumni.

Dr. L. Alan Eyre (1965-1990)

Alan now lives in St. Mary, and continues his research and professional writing. He is an active JGS member, and the fourth Life Member of the Society.

Ann V. Norton (1965-1975)

Now Mrs. Machan, Ann lives in Scotland and does some teaching for the Open University in the UK.

Dr. Barry Floyd (1966-1972)

Worked in Durban and Nigeria after leaving UWI, now retired and lives in Plymouth, England. Still does some part-time teaching at the Southwest Polytechnic in Plymouth. JGS's first Life member.

Mr. Edward M. Douglas (1966-1967)

A New Zealander, now lectures in sociology at the University of Waikato.


A Bahamian living in Barbados, Dawn does consultancy research and writing.

Dr. John H. Fermer (1967-1971)

A Scottish geomorphologist who now lectures in the Dept. of Humanities, Glasgow College of Technology.

Dr. Ruben (Bud) Frank (1971-1973)

An American geomorphologist who now lectures in the Dept. of Geography, University of Newcastle-upon-Tyne.

Dr. D.K. Erb (1971-1972)

A Canadian who returned to the University of Windsor in Canada.

Dr. Brian J. Hudson (1971-1985)

Brian came to Jamaica via Hong Kong and a Jamaican wife, and now lectures in the Dept. of Planning, Queensland University of Technology, and retains a keen interest in the Society's activities.

Mrs. Eleanor B. Jones (1973-1985)

Consultant Geographer, President of Caritech and founder member of Environmental Solutions, Eleanor is an active JGS member amongst her many professional and voluntary pursuits.

V.C. Mulchansingh has more information.
The Homerus Swallowtail butterfly: Jamaica's endangered giant

Audette Bailey

Gigantic, magnificent and spectacular are words which readily come to mind when the Giant Swallowtail Butterfly (*Papilio homerius*) is seen on wing. It is the largest butterfly in Jamaica and the largest true swallowtail species in the Americas. Its forewing length on average, the female tends to be larger on the ventral surface of the hind wings.

Dorsally, the mature larva is green with purple/brown and white bands, while ventrally it is purple brown. The thorax, which is enlarged, has markings on it that resemble a large mouth and eyes, creating the effect of a large false-head. Hence, when the small head is withdrawn, the anterior appearance of the larva is snakelike.

The Giant Swallowtail's habitat is restricted to elevations of 150 metres to 600 metres. It is often seen in virgin forest on mountain slopes and along mountain streams.

Historically, three population centres have been described; an eastern, a central and a western population centre. The area in which *homerius* has been most collected and sighted is in the eastern parishes of St Thomas and Portland, at the junction of the John Crow Mountain and the Blue Mountain range – Corn Puss Gap and Cuna Cuna Pass.

The John Crow Mountains are predominantly limestone and the forest there is lower Montane Rainforest where the annual rainfall exceeds 450 cms. The larval food plant, the Water Mahoe (*Hernandia catalpaefolia*) can be found along the many streams which characterise this forest.

Mount Diablo is described as the former home of the central population centre. Few sightings have been recorded here and this population is believed to have become extinct about the beginning of this century.

Cockpit Country still has virgin forest and supports the western population of the butterfly. Annual rainfall exceeds 450 cms. Pumpkin Wood (*Hernandia jamaicensis*) is the larval foodplant there.

The butterfly's population has diminished over the years through commercial collecting and habitat destruction, a result of subsistence agriculture and commercial forestry. In the John Crow Mountain/Blue Mountain range subsistence farmers clear fairly large areas of forest on steep slopes for cash crops, and so destroy the butterfly's habitat. When commercial forestry was introduced into the Rio Grande Valley extensive forested areas were cut, in preparation for pine plantations. Thus, prime habitats were removed, further threatening the butterfly. No active forestry has been in progress since Hurricane Gilbert in 1988, but its reintroduction is still a possibility.

The population in the Cockpit Country is believed to be the least disturbed. Indications are that the rugged terrain reduces access thus aiding protection. This population is, however, vulnerable since the few flat areas that exist are often cleared for planting cash crops.

Efforts have been made in the past to publicize the plight of the animal. Among the efforts was the production of a documentary film in 1984 called *Papilio homerius*, the Vanishing Swallowtail Butterfly by John Parrell and Eric Garraway. Aspects of the ecology, biology and vulnerability of the species to extinction are featured in this film.

Current research, headed by Eric Garraway (Zoology Dept, UWI) will aid in the formulation of a management plan for the species and ultimately, its conservation.

Audette Bailey is a Research Assistant with the UWI/JARP Butterfly Project.

Jamaican Geographer (4), May 1991–7
CARIBBEAN GEOGRAPHY AND UWIPA

Caribbean Geography has a new publisher, the University of the West Indies Publishers Association. UWIPA started in 1986 as a small informal co-operative group of UWI journal editors and others concerned with publishing on Mona campus. It has grown into a publishing venture that offers a desktop publishing service, produces a catalogue of all UWI publications (and some other Caribbean books), and has an extensive marketing network in the Caribbean, Europe and North America. UWIPA has been actively lobbying for a UWI Press for several years. Caribbean Geography is the first journal it has taken on board, and another new journal, to be called Caribbean Review of Books, is planned to be launched this summer.

The latest issue of Caribbean Geography, published by UWIPA, is now available. Vol 3 No 1 (March 1991) contains the following major articles:

Neil E. Sealey The significance of the geography of The Bahamas in reconstructing Columbus's route in 1492

John S Brierley Kitchen gardens in the Caribbean, past and present: their role in small farm development

Jerome V. DeGraff Determining the significance of landslide activity: examples from the eastern Caribbean

Riva Berleant-Schiller Statehood, the commons and the landscape in Barbuda

John Connell The Turks and Caicos Islands: beyond the Quest for Independence

From this issue, a new section has been added to the journal. It is designed specifically for geography teachers and teachers in training and is called Geography in the Caribbean Classroom (see page 3).

The new editorial team is David Barker (Editor), Mike Morrissey (Education Editor) and David Miller (Review Editor). Members of the JGS can subscribe to Caribbean Geography at a special 50% discount. Details of the scheme will be announced shortly.

NETWORKING

Royal Geographical Society

The RGS was founded in 1830, and has the largest private map collection in Britain, with some 750,000 map sheets and 4,000 atlases. Its library contains 130,000 books and periodicals and 25,000 pamphlets. For information contact:

Royal Geographical Society
1 Kensington Gore
London SW7 2AR

NEWS OF JGS EVENTS

Several recent JGS events have been arranged at very short notice, due to inclement weather and other uncontrollable factors. The Council tries to inform members and schools about postponements or cancellations, but this is difficult and not always effective. The UWI News sections of the Sunday Gleaner and Sunday Record are used to publicise events, but members are strongly urged to check with the Geography Department (phone 92-72129) the day before an event, as a precaution.

Quiz answers

2. Iraq 10. Saudi Arabia
3. Tanzania 11. Greece
4. Tunisia 12. Israel
5. Turkey 13. Italy
6. Egypt 14. Lebanon
7. Peru 15. Sudan
8. Turkey

JAMAICAN NATURALIST

The Jamaican Naturalist is the new biannual magazine published by the Natural History Society of Jamaica. Edited by Peter Vogel (Department of Zoology, UWI), it replaces the Society’s previous publication, Natural History Notes, which appeared in mimeographed form for nearly 50 years. Publication of the new magazine was supported by grants from the Panos Institute of Washington D.C. and the World Wildlife Institute.

The magazine is designed to cater for those interested in the Jamaican environment and focuses on the flora and fauna of Jamaica’s natural habitats and the threats they are exposed to, and on conservation and sustainable development. In the first issue, for example, there are articles on the Bromeliad Crab by Rudolph Diesel, the re-introduction into the wild of the Jamaican Hita (Coney) by Laurie Wilkins, and the crisis in forestry and water shed management by Alan Eyre.

Jamaican Naturalist is a scientific magazine, which succeeds in being highly readable and has been produced in a lovely glossy colour format. Its high quality marks it as a major addition to the growing list of local publications, and it would certainly grace the shelves of bookshops in Europe or North America. Fittingly, its publication marks the 50th Anniversary of the Natural History Society of Jamaica. All those associated with its production are to be congratulated. Geographers can help support the Jamaican Naturalist by subscribing to it.

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8—Jamaican Geographer (4), May 1991