

V. EXPEDITIONS AND OTHER EXPLORATION

Field Work (continued from page 3001)*

I n d i a n O c e a n

In cooperation with Dr. M. R. C r o s b y (MO), Professor W. S c h u l t z e - M o t e l (B) and his wife collected bryophytes in the Seychelles: Cerf, la Digue, Mahé, Moyenne, Praslin, in connection with a catalogue of the mosses of Madagascar, Comores, Seychelles, &c., which they are preparing.

I n d i a

The Botanical Survey of India had during 1978 a large series of collections made, as follows. In Andaman: Baratang I., Havelock Is., Dhani-khari Dam area of Port Blair, Rutland Is., 1060 specimens. In Arunachal Pradesh: Lohit District, 65. In Assam: Goalpara and Cachar Districts, 4566. In Bihar: Chotanagpur, 250. In Gujarat: 2292. In Karnataka: South Kanara District, 3500. In Kerala: Cannanore, Idukki, Palghat Quilon, and Trivandrum Districts, 3409. In Madhya Pradesh: Bhopal, Chattarpur, Damoh, Durg, Hoshangabad, Panna, Raipur, Rajnandgaon District, 4090. In Maharashtra: Akola, Amraoti, Bhandra, Kolaba, Kolhapur, Mahabaleshwar, Panchgani, Pratapgarh, plateau in Satata Districts, 11105. In Manipur: 1700 ferns, lichens, and mosses. In Meghalaya: Khasi Hills, 100. In Nagaland: 2915. In Rajasthan: Bhilwara, Ganganagar, Jaisalmer, Jabor Districts, 3681. In Tamil Nadu: Coimbatore, Nilgiri and other Districts, 13675. In Uttar Pradesh: Dehra Dun and Tehri Districts, 2600. — There may be fewer numbers than specimens.

The Eastern Circle participated in the Joint Expedition organized by the Geological Survey of India to remote areas of Lohit District in Arunachal Pradesh from September to December 1977, collecting over 330 numbers.

S u m a t r a

A team of LBN Bogor visited a number of places in West Sumatra from 16 December 1977 to 20 January 1978: Singgalang, Siberut Island, and forest bordering Marapura Nature Reserve. Over 600 numbers of plants, living and dried, were collected.

* Only collections made of herbarium specimens concern us here; not the many living plants collected, because they are unlikely to enter the record.

M a l a y a

Langkawi Islands. Dr. M. M. J. v a n B a l g o o y (L), who in 1974-1975 was in Malaya (see *page 2535-2536*), reported in *Acta Bot. Neerl.* 27 (1978) 146-147 as follows: The Langkawi Islands are situated at 6°20'N. and 99°50' E. at c. 20 km off the northwestern part of Malaysia (Malaya). The area is just over 400 sq. km and the highest elevation is c. 1000 m. The island group is subject to a seasonal climate. Annual precipitation amounts to c. 2,500 mm, with rainfall peaks in May and October and a pronounced dry season in January/February. Geologically the islands are very interesting: highly metamorphic rocks of Cambrian age in the W, sedimentary sandstone of Carboniferous to Permian age in the centre and in the E the so-called Setul Limestone (Ordovician and Silurian) and the Chuping formation (Permian limestone). These limestone rocks are responsible for the fantastic karst topography of a great part of the islands. There are also several scattered granite intrusions. The forest is relatively well preserved especially on the limestone. The total number of native vascular plant species on record so far is 1036 belonging to 563 genera, numbers expected to increase drastically with more exploration. The vegetation over limestone is stunted and xeric, unlike that over other rock types. The floristic composition is also quite different. A sinkhole basin on Pulau Langgun contains a lake of 5 ha (pH = 8). It supports a dense submerged vegetation of *Nitella*, *Utricularia* and *Najas*. Scattered tree trunks were found rooting in the bottom of the lake with their broken end near the water surface. Apparently the basin was once covered with forest which was killed when the drainage was blocked and the basin filled with water. A heavy marshy forest surrounds the lake, the vegetation rapidly assuming a xeric character away from the lake on the surrounding limestone rocks. The dominant tree here is *Pentaspadon curtisii* (Anac.), a species rare elsewhere. In the undergrowth the most conspicuous species is *Impatiens mirabilis* (Bals.) with a 'trunk' 40 cm across at the base and up to 2.5 m tall.

Singapore Collectors, led by Mohd. S h a h bin Mohd. Noor, were active as follows. From 8 to 13 June 1978 to G. Bubu, Keledang, Saiong F. R., via Kuala Kangsar in Perak; harvest 53 numbers. From 5 to 7 October 1978 to Jambu Bongkok, Rantau Abang and Kuala Abang in Trengganu; harvest 17 numbers. From 22 to 26 November 1978 to largely the same area again; harvest 30 numbers. Besides, much living material for cultivation was taken.

B o r n e o

Royal Geographical Society Expedition to Gunong Mulu National Park, Sarawak, 1977-1978. In June 1977, the Royal Geographical Society of London launched a 15 month survey of some 560 sq. km of rain forest on the borders of Brunei and the Fourth and Fifth Divisions consisting the newest and largest of Sarawak's National Parks. The scenery of Mulu is magnificent, with sweeping views over forested valleys and meandering rivers. G. Mulu (2377) and its range of hills is sandstone, but to the

North of the mountain it is a ridge of limestone, with karst topography of cliffs, pillars, caves and gorges. Pinnacles of limestone rise above the forest and there are miles of caves and caverns that help to make this one of the scenic wonders of the world. The diverse forest types range in altitude from low-lying alluvial, to mixed dipterocarp forests with hardwoods towering to 55 m on the mountain slopes, and montane or mist forest full of mosses, with orchids and pitcher plants on the mountain crests.

The Expedition was carried out at the invitation of the Department of Forests, Kuching (Director Mr. Joseph Y o n g) and Mr. Paul C h a i, Forest Botanist, was chief liaison officer. The Expedition was lead by Robin H a n b u r y - T e n i s o n and the coordinator of the 50 projects carried out on the Expedition was Clive J e r m y (British Museum Natural History, London). Over 115 scientists took part, one third of them from Malaysia, the rest from Holland, Denmark, Australia, New Zealand, Canada, U.S.A. and the United Kingdom.

The scientific programme was in five parts: i) floristic and vegetation survey; ii) faunistic survey; iii) landform, climate and soils; iv) forest ecology - a study of nutrient flow in four types of primary forest; v) survey for a management plan. The latter was funded by the World Wildlife Fund Malaysia.

A full review of the scientific work carried out will be published in the Geographical Journal (vol. 145 pt. 1) but it is appropriate here to summarise the botanical projects.

The basic vegetation survey was carried out by Dr. J. A. R. A n d e r s o n, now of Singapore, formerly Assistant Conservator of Forests, Sarawak, and the man responsible for promoting the area as a National Park. He was ably helped by Paul C h a i and a team from the Forest Department, Kuching and Miri. Other specialists, spending various periods in the Park helped to establish an inventory. Dr. John D r a n s f i e l d (Kew; 3-26 Oct. 1977) studied palms and collected over 120 species (SAR* and K) including several new taxa. He estimates the Park contains 40-50% of the total palm flora of Sarawak. Dr. Ben C. S t o n e (University of Malaya, Kuala Lumpur; 31 March-15 April 1978) collected 160 nos. (13665-13725; SAR and KLU). He concentrated on Pandanus (9 sp.) and Freycinetia (7 sp.) and Rutaceae (9 sp.). Dr. Ruth K i e w (University Pertanian, Kuala Lumpur; 14 April-7 May 1978) made a general collection of herbaceous plants and accessible climbers (289 nos. representing c. 120 sp.; UPM, SAR, K, E). Dr. Carlo H a n s e n (Copenhagen; 15 Jan.-2 April 1978) made 550 (1-550) gatherings of flowering plants and ferns (C, SAR, E/K) of which some 130 were of Melastomataceae in 50 sp.; 91 samples were preserved in FAA. Dr. Ivan N i e l s e n (Aarhus; 15 Jan.-7 April 1978) collected 972 nos. (1-972) of flowering plants and ferns (AAH, SAR). Dr. George A r g e n t (Edinburgh; 29 Oct.-25 Nov. 1977; 31 March-12 May 1978) concentrated on Ericaceae on the mountain ridges including the taking of living material to Edinburgh, 609 nos. (600-1209) were collected (E, SAR, L). Mr. Gwilym L e w i s (Kew; 2-24 Oct. 1977) collected

* Not all herbaria listed thus have complete sets of numbers but may contain some of the gatherings only.

flowering plants, particularly Leguminosae (and 5 fungi - *Calostoma* sp.); 102 nos. (271-372; K, SAR) were collected.

Pteridophytes were collected over a wide area of the Park. Mrs. Barbara Croxall née Parris (Cambridge; 16 June-10 July 1978) specialised in Grammatidaceae (50 taxa collected), the family she is preparing for Flora Malesiana. Clive Jeremy first visited the Park in 1976 (23 Sept.-12 Oct.) for the Roy. Geogr. Soc. and with Peter J. Martin (VSO, Forestry Department, Kuching) whose collections are in SAR. Jermy collected 371 nos. (12988-13359; BM, SAR, L) on that visit. He made two further visits (4 March-23 April; 31 July-27 Aug. 1978) collecting 872 nos. (13601-14213; 14223-14483; BM, SAR, L). Dr. Trevor Walker (Newcastle-upon-Tyne; 15 July-23 Aug. 1978) collected 628 ferns (nos. 13035-13663; BM, SAR) and fixed c. 260 tubes of meiotic material for subsequent chromosome counts. Living ferns were sent to K and Newcastle.

The cryptogams were also studied by specialists. Dr. Andries Touw (Leiden; 29 April-8 June 1978) collected bryophytes, almost exclusively Musci, and found a rich flora especially on the limestone. Work on identifications has yet to proceed but several new records to Borneo have already emerged. He collected much material which is now being sorted out for L, SAR, BM and others. Lichens were collected by Brian Coppins (Edinburgh; 29 March-24 May 1978) who included non-lichenised fungi in his collections, numbering 726 gatherings (E, SAR). Dr. Nathan Sammy (Dampier, W.A.; 17 June-1 July 1978) also collected lichens; 316 (SAR, PERTH, BM) gatherings were made. A detailed collection of fungi was made by Dr. Walter Jülich (Leiden; 18 Feb.-15 April 1978); 4,016 specimens were collected (L, SAR), a large number of them new taxa.—A.C.Jermy.

Sarawak, smaller news. Mr. B. L. Burt (E) spent about two months in Sarawak, starting in mid-August 1978, in the Ulu Linau area at Belaga and the Lambir N. P. at Miri, collecting Gesneriaceae and Zingiberaceae. In both places he collected over 200 specimens. SAR-Herbarium staff accompanied him, collected 172 and 175 specimens.

Mr. Josef Bogner (M) spent a month in Sarawak, September 1978, to collect aroids; they were dried in the SAR-Herbarium.

SAR-Herbarium staff of Kuching collected one week during 1978 in Telok Belian N of Santubong, which was never explored before; 89 specimens.

Kalimantan. An LBN team of Bogor with Mr. Wiriadinata, during a one-month trip to East Kalimantan early in 1978, collected c. 750 numbers.

A team of Japanese botanists of KYO, headed by Dr. K. Iwatsuki, arrived for an expedition to last from mid-December 1978 till late February 1979.

Brathay Expedition to Sabah, 1977. This group from Ambleside, Cumbria, U.K., explored Mt. Trus Madi, the Tawai Plateau, and Mt. Kinabalu, between 1 August and 1 October. The primary aims of this expedition were to make ecological studies of *Nepenthes* in the field. This work included comprehensive collections of 102 herbarium numbers by R. Hobbs, plus numerous live plants, all of which were sent to Kew. Two artists were able to make detailed drawings of live plants.

M. F. Gardner of Bangor, Wales, made more general collections,

giving priority to Ericaceae, Gesneriaceae, and Zingiberaceae. In all 76 herbarium numbers were collected, the top set of which was deposited at Edinburgh and Leiden. In addition more than 100 live plants were collected for cultivation at the Royal Botanic Garden, Edinburgh.

Ten days were spent exploring the Kaintano Ridge on Mt. Trus Madi. After making Kampong Sinoa the base camp, three more successive camps were established at 1000 m, 1700 m and 2700 m, spending two to three days collecting around each site. The moss forest extends from about 1700 m to 2700 m. It was here that two small colonies of Nepenthes lowii and N. edwardsiana were discovered, the latter only previously known from Mt. Kinabalu. After first failing to penetrate the bamboo and moss forest, in order to reach the summit, a second attempt was more successful. As expected the exposed ridges and summit consisted of low ericaceous scrub, with intermittent denuded areas with herbs like Aletris foliolosa and Trachymene saniculaefolia.

A week of field work was carried out in and around the lake area on the Tawai Plateau, which included taking measurements of morphological characters of Nepenthes populations. On the Plateau 7 Nepenthes species with many hybrids were found, including the epiphytic N. veitchii.

The last week was spent on Kinabalu, taking the traditional route to the summit.

C e l e b e s

Mr. Johanis P. M o g e a and other LBN Staff from Bogor went collecting in Lore Kalamanta Reserve, where they took c. 470 numbers, from 6 October to 2 November 1977.

North Celebes and the North Moluccas were visited by Messrs. Sukendar and Naiola, in October and November 1977; they collected some dried specimens and 137 living plants.

The Rijksherbarium expedition to Ceram had to be diverted to one to Celebes. Messrs. M.M.J. van Balgooy, E. Hennipman, G.J. de Joncheere and E.F. de Vogel set out early in April 1979, for Lore Kalamanta and the Mastana-Towuti lake area in the centre. The little known Eastern (Banggai) Peninsula is an aim of Operation Drake, 'a unique round the world voyage for young explorers', late in 1979.

N e w G u i n e a, W e s t

Dr. P. H i e p k o and Dr. W. S c h u l t z e - M o t e l of the Botanical Garden and Museum Berlin-Dahlem (B) worked in 1976 for two months in West Irian. Here is the report of Dr. Hiepko: In connection with the interdisciplinary research project Man, Culture and Environment in the Highlands of West Irian sponsored by the German Research Society (Deutsche Forschungsgemeinschaft) we had the opportunity to make some field work in Irian Jaya. The project was started in July 1974. At that time the first group of researchers, mainly ethnologists, had chosen the area to be explored. This until then virgin area, the so-called Eipomek

Valley, is situated just north of the central mountain range at approximately 4°25'S and 140°01'E between 1350 m and 2100 m. Our task was to study the vegetation of the valley and the ethnobotany of the people living there.

We reached Jayapura on 19 January 1976. After some necessary official visits and completion of our equipment we had to wait for an opportunity to fly to the mountains. (In 1975 an air strip was finished in the Eipomek Valley). During this time we collected in the vicinity of Jayapura (85 nos.) and, for two days only, at Wamena in the Baliem Valley at approximately 1650 m (100 nos.). On 11 February we succeeded in reaching our camp in the Eipomek Valley at 1800 m. The following 6 weeks we spent collecting in this area staying in three different camps. Firstly at the main camp of the project (1800 m), secondly near the village Malingdam (2000 m), and thirdly near the village Talim (1700 m).

The forests of this part of the lower montane zone are dominated by Castanopsis and Lithocarpus species, in the lowermost regions (c. 1400 m) by Albizia falcataria. Very impressive are the huge stilt-rooted pandans (Pandanus antaresensis), reaching into the canopy. The material collected was preserved by formalin because it was impossible to transport the kerosin needed for drying. We collected 500 numbers of vascular plants (mostly Angiosperms) and 470 numbers Bryophytes. The specimens are mostly in 5-fold. One set was directly given to the Herbarium Bogoriense, one set was sent to Leiden in June 1978. Copies of several photographs and vouchered colour slides are also deposited at L. A detailed report on this expedition will be published in a special series on the whole project.

Note: An other participant of the Eipomek research project, Dr. W. S c h i e f e n h ö v e l (Max-Planck-Institut für Verhaltensphysiologie, Seewiesen), who is working on ethno-medicine, collected in the same area (1975/76) c. 120 nos. of vascular plants. These specimens (mostly with one duplicate) are kept in Berlin and Leiden.

A u s t r a l i a

The BRI-Herbarium sent information about some Expeditions:

T. D. S t a n l e y and J. R. C l a r k s o n — Shoalwater Bay, July 1977. The 520 specimens collected on this trip have been processed and the duplicates are ready for distribution. The area is not often visited and access is difficult.

N. B y r n e s, J. R. C l a r k s o n and B. K. S i m o n — April 1978. Two areas of the Clarke Range, the Conway Range and Mt. Dryander in Central Queensland were visited. The approx. 700 specimens from this expedition are currently being named.

J. R. C l a r k s o n and R. D o w l i n g — June 1978. Eastern Cape York Peninsula, including Escape River, Temple Bay, Glennie Inlet, Flinders Island. Approx. 400 specimens collected.

J. R. C l a r k s o n, P. S. L a v a r a c k (Qld Nat. Parks & Wildlife Service) and three other orchidologists, July 1978. Australian Orchid Foundation trip to McIlwraith Range, Cape York Peninsula. Approx. 140 specimens collected (mainly orchids and ferns).

And also on some Vegetation projects:

Vegetation Mapping of Queensland 1:1,000,000 series (D. E. B o y - l a n d). Cartographic work on the first map covering the far southwest part of the state has been completed, and work has commenced on the second sheet (the central southern part). The project is being financed by the Commonwealth government and the whole state will be mapped in about 10 years if funding continues at the present rate.

Mangrove Mapping (R. D o w l i n g). Mapping of the mangrove communities between the New South Wales border and Gladstone has been underway for some time. Maps have been printed for the Moreton Bay area and for the Gladstone-Round Hill Head area and the explanatory booklets should be printed in 1979. This is a joint project with the Queensland Fisheries Service. Future work will cover Cairns and Cape York. Two weeks were spent during 1978 on a reconnaissance survey of the mangrove communities of Cape York Peninsula. Additional reconnaissance work is planned for Cape York Peninsula during 1979.

Dune Vegetation Surveys for Beach Erosion Investigation Reports (T. J. M c D o n a l d, G. N. B a t i a n o f f, T. E l s o l). A series of coastal vegetation surveys is being undertaken for the Queensland Beach Protection Authority as part of their Investigation Reports. Although primarily concerned with dunal vegetation, the vegetation on other coastal landforms is included for the sake of completeness. Extensive field work is undertaken and comprehensive plant collections are made. At the completion of the survey vegetation maps and reports are prepared. The survey for the Livingstone Shire of Central Queensland was completed during 1978 and will be released in 1979 as a Technical Bulletin containing a comprehensive account of the vegetation and a series of 5 vegetation maps at 1:24,000 scale. Similar surveys of the coastal areas immediately north of Brisbane (Sunshine Coast) and the Mulgrave Shire based on Cairns will be undertaken during 1979.

Moreton Region Vegetation Map Series (W. M c D o n a l d, J. E l - s o l, R. D o w l i n g). Mapping of the vegetation of south-east Queensland is currently in progress. Brisbane and Beenleigh 1:100,000 scale maps and explanatory booklets have been released and Caloundra and Murwillumbah 1:100,000 maps and booklets will be printed early in 1979. Work on Warwick and Ipswich 1:250,000 scale vegetation maps will commence in 1979. The Murwillumbah map includes part of the McPherson Range which incorporates the Lamington and Springbrook Plateaus. The major feature of the vegetation is the 14,000 ha of rainforest within the Lamington National Park. The remainder of the McPherson Range is included in the proposed Warwick Sheet.

P a c i f i c

New Caledonia. Dr. Rudolf S c h m i d of UC and party spent July and August 1978 on general collecting and concentrating on fleshy-fruited Myrtaceae, especially Syzygium and relatives.

Early in 1979, Missouri Botanical Garden will begin a long-range program of botanical research and exploration in New Caledonia, where a new staff member, Dr. Gordon M c P h e r s o n will take up residence. His first subject will be Euphorbiaceae, in preparation for the Flore de la Nouvelle Calédonie.