V. EXPEDITIONS AND OTHER EXPLORATION

a) Field Work *(continued from page 2784)**

C e y l o n

On 3 September 1977, Dr. H. P. N o o t e b o o m (L) went to Ceylon for 2 months to collect additional material of Symplocaceae for 'A revised Flora of Ceylon'. Although this project was due to end by September 1977, it appeared to have been extended for another year. The genus Symplocos, with about 20 taxa, is found in the wet zone (in the mountains of the central part, in the mossy forest up to 2400 m, descending to sea-level in the everwet primary forest in the SW. part of the island). Some species also occur in the secondary forest in the same region, one species is found in the whole island, in a variety of vegetation types, but mostly in secondary forest and shrubbery.

Dr. Nooteboom could collect material of all the taxa, sometimes in many individuals, which revealed the difficult patterns of variability. Besides he made also general collections (Nooteboom 3036–3420). The weather was extremely bad; heavy rains caused inundations and landslides. Therefore the total number of collections was limited. Labelling and distribution is still going on.

Swedish interest in the Ceylon flora. During the last five years several Swedish botanists have directed their interest to the flora of Ceylon. This is due mainly to the now reasonably cheap charter flights from Sweden to Ceylon. There are also two botanical tours around the island arranged every year by one of the Swedish travel agents, 'Vingresor'. These botanical tours are conducted by Prof. Folke F a g e r l i n d, who retired as Director of the Institute of Botany at the University of Stockholm in 1973. Prof. Fagerlind has since then spent each winter in Ceylon, and on March 2nd 1977 he celebrated his 70th birthday at Negombo North of Colombo, congratulated by visiting Swedish botanists. The botanical tours have become very popular among amateurs as well as professional taxonomists. The cost is now roughly 4000 Swedish kronor or US $ 900 for a fortnight all included. Vingresor generously grants half the cost for four students each year. Thus it has been possible to interest many younger students in the tropical flora. During these last years a fairly large

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

herbarium of Ceylonese plants has been brought together. It comprises several thousand specimens, and it is now housed at the Institute of Botany, University, S-10405 Stockholm. Most of the material has been collected by Prof. Fagerlind. Important contributions have also been made by Mr. H.-E. W a n n t o r p and Mrs. H. W a n n t o r p, who spent several months in Ceylon in 1972, 1973 and 1974. Limited material can be sent on loan to taxonomists working for the Flora of Ceylon, but in general the facilities for sending material on loan are very restricted. Some of the taxonomists from the Institute of Botany in Stockholm have now started more active work on the flora of Ceylon. These include Prof. Fagerlind himself, mainly interested in the family Podostemonaceae, and Dr. K. B r e m e r, who will do Memecylon (Melastomataceae) for Flora of Ceylon. In connection with this flora project Dr. Bremer visited Ceylon together with his wife, Mrs. B. B r e m e r in February and March 1977. Mrs. Bremer, who is also a taxonomist, is working on Neurocalyx (Rubiaceae). Mr. J. K l a c k e n b e r g is doing an inventory of the Hakgala Nature Reserve, where he stayed from November 1977 to February 1978. This is financed by SAREC, the Swedish Agency for Research Cooperation with Developing Countries. Mr. Klackenberg is also working on a revision of Exacum (Gentianaceae). In the future it is expected that more Swedish taxonomists will start working on Ceylonese plants.

I n d i a

Dr. H. P. N o o t e b o o m (L) had planned, together with Prof. dr. K. U. K r a m e r (Z) and his assistant Dr. G. B. N a i r, to make an expedition to the Andaman and Nicobar Islands. Good relations already existed with the regional botanist, Dr. N.P. Balakrishnan, head of the Andaman & Nicobar Circle of the Botanical Survey of India. Of the species of the Nicobars 65% also occur in Malesia, and many of them are not found in the rest of India. Therefore the Herbaria of BO and L are important for identification of Nicobar plants. The islands form a 'restricted area', and a special permit is required for visiting them. A plan for a joint expedition has been sent for approval to the Department of Science and Technology in New Delhi. For obscure reasons approval was denied in a short note, in which the possibility was mentioned to visit the islands as a tourist. Consequently a tourist permit was obtained, and the party arrived in Port Blair the 1st of November. No permit is given at all to visit Little Andaman and the Nicobar Islands. Although Prof. Kramer and Dr. Nooteboom were aware of the fact that for some reason or another, Dr. Jain, the acting director of the Botanical Survey of India, strongly opposed their collecting, some bo-

tanical work could be done; further details are to be published in a later issue.

The Andamans form a group of islands in the Gulf of Bengal between Burma and Sumatra. Recently K. Thothathri published his 'Contribution to the flora of the Andaman and Nicobar Islands' (Bull. Bot. Survey India 4: 281-296. 1962). As he pointed out the (natural) vegetation of the Andamans is directly related to the soil, as climatically the islands may be considered to be more or less homogeneous throughout.

Thothathri distinguished the following types of vegetation: 1) Mangrove forest, 2) Beach forest, 3) Evergreen forest at low altitudes, 4) Moist deciduous forest (originally about one third of the area), 5) Moist evergreen forest at higher elevations, 6) Vegetation in cleared lands and open areas.

The mangrove and beach forest were found more or less undisturbed with the same species as mentioned by Thothathri.

The evergreen forest. This type of forest grows on deep fertile alluvial clay, a type of soil that is very suitable for the cultivation of food crops, especially rice. As also some of the most important timber trees grow in this type of forest, it is not very speculative to say that this kind of forest will disappear in a few years. Large areas are already brought into cultivation by settlers, and throughout Middle and South Andaman hardly any undisturbed forest of this kind was found. Often the whole forest was destroyed, not only for rice fields, but also for extracting timber, and in several places plantations of trees, often bad-growing teak, were found. In other places the timber trees were extracted, and among the remaining trees a vegetation of many secondary shrubs and climbers developed.

The deciduous forest, occurring in undulating ground in hills. Here Pterocarpus dalbergioides is one of the mostly sought after timber trees, along with the Padauk several other species are cut for timber, as Terminalia procera, Canarium euphyllum, Artocarpus chaplasha, Tetrameles nudiflora. Also this kind of forest is heavily treatened by timber extraction, often entirely clear-cutting. In the disturbed forest the deciduous aspect often disappears, by the invading of many evergreen secondary trees and shrubs. Also many climbers are found as the result of disturbing.

Moist evergreen forests in hills. Unfortunately the party could only once penetrate this kind of forest, because the hills were dangerous by the savage arrow-shooting Jarawahs. Also in this vegetation timber extraction is going on. Many Dipterocarpus species grow in this forest, forming with some other genera the canopy. Beneath this amongst others Myristica andamanica, Garcinia andamanica, G. speciosa and Pometia pinnata are found. Open places, becoming more frequent through

extraction, are covered with plants like Anaxagorea luzonensis, Antidesma diandrum, Mallotus repandus, Desmodium triquetrum, Dracaena helferiana and other species. Here also many secondary plants invade the vegetation.

Further impressions: the trunk road, running through South, Middle and North Andaman, and now ready through South and Middle Andaman except for one place, opens up the country for settlement and timber extraction. In many if not all places where there is suitable land, settlements of different kinds of people are already made. The original settlers were convicts from the penal settlement at Port Blair. Nowadays most settlers are refugees from Bangla Desh: 60 families, each of them often about 10 people, are allowed to settle each year.

The Forestry Department has the task of extracting timber, and making money. In Middle Andaman a plywood factory operates, mainly using Dipterocarp wood. The capacity is 25 m3 of timber per day, but the supply has diminished to 12 à 13 m3 per day because of exhaustion of the forests. As logging in North Andaman only recently commenced, the production of this small area is larger than that of Middle Andaman. It is clear that the situation will become disastrous for the vegetation and hence also for the people. Already there is lack of water during dry periods, and the thin layer of soil in the hills is wasted away rapidly. At the end of the century, or probably much earlier, the Andaman Islands will be overpopulated and poor, lacking food as well as water for its inhabitants.

The situation also looks very bad for the aborigines. One tribe, the Great Andamanese, who are of a friendly nature and kind to foreigners, already are nearly extinct because of sterility, caused by syphilis. Only 23 of them are left; they are resettled on Straight Island, and dependent on the government for food. The other tribe, the Jarawahs, always have been hostile. The general policy of the government is to protect them from interference by others, with 20% of the total area of Middle and South Andaman being reserved for them. This amounts to c. 200 square miles (the population is estimated to be about 200, and forest dwellers need 1 square mile each for food). Their area is west of the main ridge of hills and very narrow in some places. This results in lack of water in the dry season, and they are compelled to cross the trunk road in search of water. From this clashes with settlers arise. Also some settlers go hunting in Jarawah territory, and cut firewood. Elephants, used for timber extraction, browse in Jarawah territory, causing much fear and hostility. For all these reasons, it is doubtful whether the official protection will work in the future. It is to be feared that the Jarawahs will be exterminated in due time.

The situation on Little Andaman and Great Nicobar is much better for the moment, but there is information about a be-

ginning of settlement as well as timber extraction already. It is a pity that it was not possible to visit the Nicobar Islands, as their flora is only partly known, but seems to be much richer than the flora of the Andamans, and closely related to that of Sumatra.

Botanical Survey of India collections were made in the following areas: — Himachal Pradesh: Harimpur, Una Distr., Hemund and surrounding area of Chamboli Garhwal and Philibhit District (971 numbers). — Rajasthan: Jaisalmir, Banswara, Pali, Tonk, Ganganagar, Jodhpur, Jalore Districts (1231 numbers). — Madhyapradesh: Balaghat District, Dhar and Khargon Districts (500 numbers). — Meghalaya: Khasi Hills (418 numbers). — Manipur (525 numbers). — Mararashtra: Bhandra, Poona, Kolaba, Amaraoti, Akola, Kolhapur Districts (1900 numbers). — Karnataka: Hulical, Kanara and semi-arid regions (700 numbers). — Tamil Nadu: South Arcot, Thanjavur, Pudukottai, Madurai, Kanyskumari Districts (810 numbers). — Kerala: Palghat, Trichur, Idikki, Trivandrum and Quilon Districts (1153 numbers). — Andaman and Nicobar Islands: Great Nicobar, South Andamans, Little Andaman, Katchal, Noncowry, Narcondam and Havelock Is. (1015 numbers).

Mr. N. C. S h a h of Lucknow and party made a botanical trip to the Nanda Devi Sanctuary high in the Himalaya, from 11 September to 16 October 1974; his report is to be published in Himalayan Journal 35. Collections amounted to 150 specimens of c. 80 temperate species.

T h a i l a n d

An orchid journey. To get additional data for his manuscript of Flora of Thailand, Dr. Gunnar S e i d e n f a d en is busily planning for his (last) orchidological collection trip in Thailand. The trip will be undertaken in March 1978, covering northern and central regions under the auspices of the Siam Society and the Royal Forest Department.

Safe in the Peninsula. In April 1977 Dr. B. C. S t o n e and Dr. E. F. A n d e r s o n (KLU) joined Dr. Tem Smitinand (BKF) for a week's botanical exploration in southernmost Thailand. Though the area was potentially dangerous because of terrorist activity, the trip was safe and satisfactory. One of the interesting results was the identification of Pandanus immersus formerly known only from Malaya as a sporadic plant in the great lake of Thale Noi.

M a l a y a

Palms were collected in many places by Dr. J. D r a n s - f i e l d of Kew, during his stay from April 1977 to February 1978.

Mr. Gwilyrn Peter L e w i s (born 1952, Forres, Scotland) graduated at Luton College of Technology (1973, B.Sc. Hons. London External in Botany and Geography), appointed to Kew April 1975, now working on Leguminosae, made collections in Malaysia during 1977 as follows: Malaya. In August: Trengganu, Cameron Highlands (with Dr. J. Dransfield); Selangor. In September: Cameron Highlands, Maxwell Hill, Penang, Negri Sembilan, Johore, and Singapore. In October Sarawak: 4th Division, Gunong Mulu National Park with the Royal Geographical Society. — Collections: Largely Leguminosae, Balsaminaceae, Begoniaceae and Orchidaceae. — In Malaya numbers 70–256; in Singapore 257–270; in Sarawak 271–373. — At time of writing duplicates still to be distributed.

Pulau Redang. This island off the East coast of Malaya was the subject of a multidisciplinary exploration and survey partly sponsored by the World Wildlife Fund of Malaysia. Among the participants was Dr. E. S o e p a d m o and one of his 1977 Botany Honours students. A floristic study of the island will be one of the expedition results.

Miss L o Yen Nyuk (KLU) collected throughout the summer and autumn 1977 on Kedah Peak for data for the flora of the montane zone in this isolated mountain. The work will appear initially as an Honours project thesis in the University of Malaya.

Collectors of limestone plants in Malaya, 70 names, with year(s), place(s), and approximate amount of numbers, have been listed by S. C. C h i n, Gard. Bull. 30 (1977) 168-170.

Mr. Brian Everett of Kendal, England, made a collection of palms in Malaya some years ago, and visited Kew, early in 1977, to have a look at them.

P h i l i p p i n e s

Ferns in Luzon were collected by Mrs. B. S. P a r r i s of CGE, in March 1977. Accompanied by Los Baños staff, on Mt Banahan, Dolores access on the S. side, 200 numbers were taken, duplicated at CAHP. See also under New Guinea.

Indonesia

A collecting drive for wild species of horticultural value, in Kalimantan, Celebes, and Lesser Sunda Islands, by staff members of Lembaga Biológi Nasional, Bogor, was held, early in 1977. The Newsletter for Plant Genetic Resources no 1 (June 1977) does not make it clear whether herbarium specimens, too, were collected.

Sumatra

Leuser Reserves. In the Ketambe study area, on the West bank of the Alas River between Kutacane and Blangkejeren, c. 150 hectares, trails have been made and as many as 1800 trees mapped and numbered, many of the same species, yet an estimated 400 species are involved. After Dr. H. D. Rijksen had collected about 110 numbers accounted for in his recent book (see Reviews), two more collections were made by primatologists and sent to the Rijksherbarium. All focussed on what the apes eat.

C. L. Schürmann was to stay longest, and early in 1978 is still there. He commenced collecting late in 1976, in a series CS, numbered from 101 onwards. So far, some 70 numbers have been received, a similar amount may follow.

C. van Schaik and his fiancée M. van Noordwijk, stayed at Ketamber from mid-1976 to mid-1977. They collected in a series vSvN, also numbered from 101 onwards, and sent some 85 numbers to Leiden. These materials, mostly with a few duplicates, are still waiting to be worked up.

S. Bengkulu and Rejang Lebang was visited by Mrs. S. H. A. Lubis and party, on 9-30 June 1977, who collected over 400 numbers of fresh and dried specimens to Bogor.

Java

Podostemaceae. In September 1977, Mr. G. G. Hambali (BO) visited places in W. Java to study Cladopus nymani (Fl. Males. i 4: 66) on waterfalls, made collections and tried germination.

Amorphophallus decus-sylvae (Araceae), 3.20 m high, was taken from Leuweung Lancang, S. of Garut, W. Java, on 1-3 February 1977, to be placed in the Bogor Botanic Garden.

J a v a, C e l e b e s, N e w G u i n e a

British Museum (Nat. Hist.) London, Royal Botanic Gardens Kew, University of Newcastle-upon-Tyne, expedition to Indonesia and Papua New Guinea, 1969-1970.

During the second half of 1969 and the first few months of 1970, botanical field work was undertaken by four English botanists in Indonesia, particularly Sulawesi, and in various parts of Papua New Guinea. In this Bulletin no details of the work have yet been presented and to correct this omission a brief summary is now provided giving the itinerary with details of collecting numbers and general localities, collated and prepared by Martin J. S. S a n d s who, on the expedition, collected flowering plants for the Royal Botanic Gardens, Kew. The other members of the team were Mr. A. Clive J e r m y (BM; Leader; Pteridophyta and lichens), Mr. Allen E d d y (BM; Bryophyta), and Dr. Trevor G. W a l k e r (University of Newcastle-upon-Tyne; fern cytology). In Indonesia, the expedition was also sponsored by the Herbarium Bogoriense, the party being joined in Sulawesi by Dr. Mien A. R i f a i. At the end of 1969, Walker remained in Java, while the BM and Kew members of the team continued to Papua New Guinea. There they received support from the Division of Botany, Lae, when Mr. Mark J. E. C o o d e (Senior Botanist) and Mr. Yakas L e l e a n (field assistant) joined the expedition to S. New Ireland, and Mr. Don B. F o r e m a n (Botanist) and Mr. Maru K u m u l (field assistant) made up the party working in the W. Sepik Province.

After a few days in Singapore and several weeks in W. Java based mainly at the Botanic Garden, Tjibodas (collecting between 6 and 30 September 1969), Jermy, Eddy and Rifai flew to Makassar, while Walker and Sands remained in Java until 9 October, continuing herbarium work and visiting the Janlappa reserve (near Djasinga) on the 5th and Tjipanas (near Pelebrata on the south coast) on the 8th. In Celebes (or Sulawesi), the party travelled on 11 October to the Enrekang District about 300 km north of Makassar and a few days later a base camp was established just within the primary forest limit at c. 1800 m in the Latimojong massif. Between 15 October and 2 December collecting continued both below the camp in valley forest and secondary growth and at higher altitudes in montane forest and sub-alpine vegetation to the summit of Mt. Rantemario at over 3500 m, which was first reached on 21 October. During the two-month period, Rifai had to return to Java for a time, but nevertheless was able to make some useful collections of fungi. For health reasons, Jermy left Sulawesi in mid-November travelling on to Australia and Walker then assumed field leadership. In early December, from the Latimojong Mts, a brief detour was made northwards to the

Toradja region between Mekale and Rantepao (5 December) before returning through Enrekang to Makassar, with a short stop at Bungor, a limestone outcrop with small caves, on 6th. Two days later the team flew to Surabaja in E. Java, and after visiting the Botanic Gardens at Purwodadi, spent a few days in Bali, before returning overland to Bogor to prepare specimens and equipment for return shipment.

At the end of 1969 Dr. Walker remained in Java, collecting in various localities between 23 December 1969 and 6 February 1970, before moving on to Ceylon (or Sri Lanka) for further collecting and cytological work. Meanwhile Eddy and Sands travelled via Singapore and Australia, Eddy arriving in Papua New Guinea on 5 January. Jermy and Sands, separately, made a limited number of collections in Australia en route to Lae Botanic Gardens and a few collections were made in E. New Britain before the party, including Coode and Lelean, journeyed by sea to S. New Ireland, landing on the east coast on 21st. Some plants were collected near to the coast but between 22 January and 18 February, collections were made between 150 and 1150 m, about 8 km inland, based on a camp established by the Danfu river. Afterwards the party trekked down the coast and while Jermy and Eddy moved further south to Cape St. George and Lombon Island, Coode and Sands remained at Natkumlagia village, just south of the Whetin river mouth, where a few specimens were collected on 28 February.

Later, from Rabaul, where Eddy remained for a few days to despatch specimens and cargo, Jermy and Coode returned to Lae while Sands flew to Manus island and collected not far from Lorengau and in the Mt. Dremsel area between 4 and 9 March. Reunited in Madang, the party, together with Foreman and Kumul moved by air to Kilifas, c. 80 km inland and south of Vanimo in the W. Sepik Province. Extending the village haus kiap as a working camp, collections were made between 12 March and 1 April in the Yenabu river valley and hillslopes of the Bewani range up to an altitude of 375 m.

Eventually Eddy left Papua New Guinea on 15 April for Singapore, and four days later on 19th Sands began his return to Kew calling at several herbaria in Australia and the USA. Jermy left Lae on 22 April and travelled to the Philippines and Hawaii before making a number of study and lecture stops in the USA en route to London.

Localities, dates and collection numbers for the expedition are as follows: Indonesia, W. Java, Tjibodas forest reserve area and Gede-Pangrango, 6-28.IX.1969, A.C.J. (A.C.Jermy) 7000-7217, T.G.W. (T.G.Walker) 11090-11168, 11176-11310, 11315-11533, 11536-11555 (breaks in sequence in Dr. Walker's numbers correspond to those allocated to fixed material collected under A.C.J. numbers), A.E. (A.Eddy) 4001-4367, M.J.S. S. (M.J.S.Sands) 11-174; Tjimatzan, 29.IX.1969, T.G.W. 11556;

Tjibodas Botanic Garden, September 1969, T.G.W. 11557, 11558; Bogor Botanic Garden, September/October 1969, T.G.W. 11559; Janlappa (near Djasinga), 5.X.1969, T.G.W. 11560-11597, M.J. S.S. 175-188; Tjipanas (near Palebrata), 8.X.1969, T.G.W. 11598, 11599; Sulawesi, Latimojong Mts, between Pasue and Rantelemo, October 1969, A.C.J. 7218-7238, M.J.S.S. 206, 210; Latimojong Mts, 'above' Rantelemo and including primary forest and higher altitude collections, 15.X-2.XII.1969, A.C.J. 7239-7650, T.G.W. 11600-11681, 11683-11870, 11882-11891, 11895-12025, 12027-12105, 12123-12401, A.E. 4501-5537, M.J. S.S. 189-205, 207-209, 211-649, Dr. Mien Rifai, Bogor, made over 400 fungal collections but the numbering is not available at the present time; near Pasue village, October/December 1969, T.G.W. 12402-12406, M.J.S.S. 652, 653; between Pasue and Kalose, 4-XII.1969, M.J.S.S. 650; Kalose to Salobarani, 4.XII.1969, T.G.W. 12407-12411, M.J.S.S. 651; Toradja region (limestone country), 5.XII.1969, T.G.W. 12412-12417, M.J.S.S. 654-660; Limestone caves, Bungor, 6.XII.1969, T.G.W. 12418-12448, M.J.S.S. 661-664; E. Java/Bali, 9-14.XII.1969, T.G.W. 12449-12468(?); W. Java, several localities including Tjibodas and Bogor Botanic Gardens & Tjibodas forest reserve, 23.XII.1969-6.II.1970, T.G.W. 12469-12967; Australia, 7.XII. 1969-12.I.1970, A.C.J. 7651-7734; 25.XII.1969, 4 & 5.I.1970, M.J.S.S. 665-689; Papua New Guinea, New Britain, Bainings area, west of Rabaul and Kerevat, 17.I.1970, A.C.J. 7735, 7736, M.J.S.S. 690; New Ireland, Namatanai sub-province, E. coastal area near Manga mission between Weilo and the Danfu river bridge, January/February 1970, M.J.S.S. 691-707, 919-921; Danfu valley and hill-slopes based on camp 8 km inland, 22.I-18.II.1970, A.C.J. 7737-8015, A.E. 6001-6348, M.J.S.S. 708-918, 922-926, LAE series 46006-46155 (mostly Coode and Lelean); near to Natkumlagia, south of the Weitin river mouth, 28.II.1970, M.J.S.S. 927-945; between Natkumlagia and Cape St. George, 27 & 28.II.1970, A.C.T. 8016-8025; Manus province, Manus Island, near Rossun south-west of Lorengau, 4.III.1970, M.J.S.S. 946, 947; South coast, Pelekawa village and Wylli valley to the summit of Mt. Dremsel, 5 & 6.III. 1970, M.J.S.S. 948-1001, 1004-1017; Lorengau, 9.III.1970, M.J.S.S. 1002; near Rossun south-west of Lorengau, 9.III. 1970, M.J.S.S. 1003; W. Sepik province, Yenabu valley and hillslopes of the Bewani range, within 3-4 km of Kilifas village, 12.III-1.IV.1970, A.C.J. 8026-8303, A.E. 6501-6749, M.J.S.S. 1018-1291, LAE series 48154-48359 (mostly Foreman and Kumul).

During the course of the expedition, in addition to the herbarium and spirit material collected, over 700 items of flowering plant propagating material were sent by air to Kew as well as several hundred live fern specimens. Some living material was also dispatched to Edinburgh Botanic Garden and

the University Botanic Garden at Newcastle, and, in Indonesia, Dr. Walker fixed 900 samples of fern meiotic material for chromosome work at Newcastle University.

L e s s e r S u n d a I s l a n d s

W. Flores. Messrs. Johanis P. M o g e a and Eddy D j a j a s u k m a (BO) collected 250 numbers of dried and fresh plants in the Manggarai District, from 2 to 19 November 1976.

B o r n e o

The Mulu-expedition in Sarawak, great enterprise of the Royal Geographical Society (announced on *p. 2769*), will be accounted for after conclusion.

The Botany and Ecology Honours students from the University of Malaya, together with Dr. E. Soepadmo, Dr. G. Smith, and Dr. B.C. Stone, (and part of the time with Mr. S.C. Chin) spent over a week in Bako National Park, Sarawak. Transport was provided courtesy of the Royal Malaysian Air Force, and facilities were cordially afforded by the Forest Department, Kuching. The Forest Botanist, Mr. Paul Chai, joined the party for a time. A great deal of work was accomplished, some of which may even appear later in print, but the educational benefit was most important.

The specimens were collected partly in E. S o e p a d m o 's series, partly in B. C. S t o n e 's series, and partly under various student names. Over 250 numbers were obtained. Main set is for KLU, full duplicate set for SAR, and other duplicates to be distributed to K, L, SAN, etc.

Sabah: Balambangan I. Another World Wildlife Fund expedition was carried out in April 1977 to this little island just north of Kudat, Sabah. It is adjacent to (just west of) Pulau Banguey (Banggi), about which Merrill wrote in Philip. J. Sc. 29 (1926) 341-429 that Balambangan was the first site of a settlement by the British East India Company, and has archaeological interest thereby. Botanists on the expedition were Dr. B. C. S t o n e (Universiti Malaya), Dr. E. F. A n d e r s o n (Whitman College), and field staff from the University (Encik Mahmud S i d e r) and the Forest Department Sabah (Enc. Leopold, Saikeh, et al.). A report has been made which includes a floristic checklist with: - at least 22 spp. of marine algae - at least 3 spp. of Bryophyta - at least 16 spp. of Pteridophyta - 4 spp. of Gymnosperms - 63 spp. of Monocots - 201 spp. of Dicots: total 264 species (of which 185 found for the first time).

The island may possibly be given some status under the Sabah Parks Department.

Dr. B. C. S t o n e (KLU) spent part of March and April 1977 in Sabah exploring for Rutaceae in conjunction with research sponsored by the International Foundation for Science of Stockholm. Chief discovery was evidence that Citrus halimii occurs native in the Trus Madi mountains. A beginning was made at sorting out the Sabah Rutaceae, with concentration on the citroid genera. Many seeds and plants were obtained for culture in the Kuala Lumpur Garden.

W. Kalimantan. Dr. K u s w a t a Kartawinata and party (BO) visited a newly opened settlement area in peat forest at Rasau Jaya, from 3 to 21 November 1976, and collected 83 specimens.

E. Kalimantan. Messrs. Herwasono Soedjito and Maskuri worked in the MAB 1 Plot at Lempake, Samarinda, from 4 to 26 January 1977, brought 237 specimens back to Bogor.

In the same period, Mr. Dedy Darnaedi, invited by International Timber Corporation Indonesia, visited the company's concession area at Balikpapan, and made an inventory of trees in its research plot. He collected over 400 specimens.

C e l e b e s

A party of Mr. G. Panggabean c.s. from Bogor, working by Lakes Mantano and Towuti in SE. Central Celebes (or Sulawesi) from 2 to 27 November 1976, collected 161 numbers of herbarium specimens.

Miss E.A. Widjaja and Mrs. Wismianah Roedjito from Bogor made an ethnobotanical study and hunted orchids at Tana Toraja, Palopo, Bone, and near Makassar, from 11 February to 3 March 1977. They collected 215 dried and fresh specimens (108 orchids).

Mr. Johanis P. M o g e a (BO) and party made a collecting trip to G. Malemo in the Lore Kadamanta Reserve in NW. Central Celebes, from 6 October to 2 November 1977. The trip yielded 470 numbers, and living specimens.

N e w G u i n e a

East. Dr. J. F. V e l d k a m p (L) and Mr. A. V i n a s (LAE) undertook a botanical trip to the Central Range. Dr. Veldkamp could make use of the opportunity that the Department of Posts & Telegraphs erected a communication station there; he received support from the 'Treub Maatschappij', as well as from Dr. P.F. Stevens (A), and paid about half the expenses himself. Mr. A. Vinas of the Lae Herbarium went up in this joint enterprise of the two institutes.

Veldkamp arrived in Lae on 12 March 1977; the party (rein-

forced by Mr. P. K o r e s of the Wau Ecology Institute) was flown in by helicopter, and worked in the summit area of the Burgers Mountains (c. 3710 m) at c. 05°09'09" S, 143°18'25" E from 22 March to 3 April. The mountain has two peaks with a saddle in between, in a nearly N–S direction. The summit area, a few square kilometres in size, was surrounded by rather difficult terrain with densely forested steep slopes. Lack of carriers and bad weather prevented far excursions. Outcrops revealed a very soft, greyish sandstone or tuff. In the open area two vegetation types were found: Astelia-Gleichenia 'grassland' in the marshy places, and Deschampsia klossii tussock grassland in well-drained slopes. In sheltered places, Drimys-Eurya-Pittosporum-Prunus-Rhododendron (4 spp. but nothing spectacular)-Symplocos-Vaccinium scrub was found, and Papuacedrus as the only conifer in the highest places. No Myrtaceae and only a single tree fern were seen at this altitude. Indications of fire were not observed, no human tracks, no traces of game, birds were rare, reptiles and amphibians not seen. The collections made here amount to 165, of which 4 may be new. Four quadrats of 1 sq. m were investigated plant-sociologically.

After rest at Mount Hagen, a trip was also made to Mt. Kegum (c. 3400 m), 05°41'54" S, 144°06'33" E. This is the northern end of the Mt. Hagen ridge in a more or less N–S direction, from where the town of Mount Hagen can be seen. Here was already a relay station. Around it is extensive grassland, with Poa keysseri in the drier, Deschampsia klossii in the wetter parts. Drimys, Prunus pullei, Rapanea, Vaccinium and tree ferns were the main woody plants, and also a tree-like Senecio with large silvery-felty leaves, the wood strongly smelling of carrots. Podocarpus was present, Papuacedrus was not. In general, the vegetation recalled that on Mt. Wilhelm and Mt. Giluwe. The upper montane moss forest was well-developed, and except for a trail did not betray much recent human activity. Rhododendron pleianthum, a treelet of 5 m, with salmon-coloured flowers 8 cm long, was found. During the time here spent, 5-12 April, 204 collections were made.

Material was collected by Veldkamp & Vinas no 7418-7676, sets to L, LAE, etc., in the LAE-series no 59736-59837 by Vinas & Veldkamp, sets to LAE, L, etc., in the WEI-series no 1619-1628 by Kores, sets to WEI, etc. (etc. means here: other sets exist but destination not yet known).

A report: J.F. Veldkamp, A botanical trip to the Burgers Mt. and Mt. Kegum, Papua New Guinea, 1977, is in preparation. It contains an itinerary, maps, list of species collected by Veldkamp and by Kores, but not (as yet) those of Vinas, with number, and the plant-sociological results. It can be obtained from the Rijksherbarium.

Ferns were collected in 1971 and early 1972 by Mrs. Barbara S. P a r r i s (CGE), 1200 in all. Those from Brown and Musgrave Rivers and Owers Corner (all near Port Moresby) are duplicated in UPNG, while those from Mt. Hagen, Mt. Oga, Mt. Wilhelm, Mt. Kaindi and the environs of Wau are duplicated at LAE.

In May 1977, following work in New Zealand and temperate Australia, she was there again. She took from Kuriva logging area near Port Moresby 8 numbers, dupl. at UPNG; from Mt. Giluwe northwestern access and environs of Mendi township 200 numbers, dupl. at LAE; from Oomsis Ridge near Lae 50 numbers, dupl. at LAE; from Watut-Aseki divide, Ekuti Range near Bulolo 60 numbers, dupl. at LAE. As of the earlier collections, duplicates of nearly all Thelypteridaceae are at K, and the top set remains in her own herbarium.

A u s t r a l i a

In 1971, Mrs. B. S. P a r r i s (see New Guinea) collected ferns fairly extensively in the rain forest areas of tropical Queensland, of which the most important would be Mt. Bellenden Ker.

North. Earlier in the year 1977, a small group of Russian agricultural scientists were the guests of the Australian Government and hosted by the Division of Plant Industry, CSIRO. They were interested in the seeds of Australian grasses, legumes and Gossypium spp. During April a collecting trip was made through northern Australia, concentrating on the Kimberley and Pilbara regions. They were accompanied by Dr. H. E i c h l e r and Mr. R. P u l l e n of CANB, who made over 1000 collections between them, including voucher specimens for the seeds.

The Division of Land Use Research, CSIRO, carried out a survey of 'wetlands' in northern Australia during June and July 1977. They were active in the Darwin area and along the southern coast of the Gulf of Carpentaria. Mr. L. A. C r a v e n (CANB) participated as a plant collector and made about 450 collections.

A substantial grant has been received from A.B.R.S. to carry out plant collecting in the Kimberley region during the wet season early in 1978. Use of helicopters will be essential for this expedition, a task never undertaken by botanists before in that part of the continent.

P a c i f i c

Hawaii: Isoetes found. On the SE. slope of Mauna Kea, at 900 m, Mr. R. Warshauer, a graduate student of Botany, Uni-

versity of Hawaii, found it completely submerged in a fast-running stream. Dr. H. St.John is studying the species. This means even a more memorable extension of area than the finding in Sumatra (*p. 2767*).

Platanthera rediscovered, on Kaua'i, after it was collected in 1917 in this place for the last time, and in 1938 in Hawaii at all. Dr. P. v a n R o y e n (BISH) found the species, P. holochila (formerly Habenaria h.), in a large bog, in one spot only.

b) Cyclopaedia of Collectors. Additions. III
(continued from page 2785)

The H o r s f i e l d Herbarium (mostly from Java, some from Banka) which has always been a separate herbarium at Kew, partly owing to the large size of the sheets, has been incorporated in the General Herbarium, the sheets having been reduced to the standard size.

K i c k x f., J e a n
(Cycl. Coll. Fl. Males. Suppl. II in F.M. 8, 1974, 1v).
His private collection in Herb. Ghent. Dupl. ex Leyden (Blume) from Indonesia and Japan also in Herb. Lenormand (= Herb. Caen, now in Herb. Paris). Dr. P. van der Veken (letters to Dr. Frans Stafleu, 2.IX and 27.X, 1977) found that Blume sent 122 duplicates from Java, Borneo and Sumatra, and 322 from Japan. Most specimens are without collector's name (in a few cases Korthals's name was found) or localities.

M i t c h e l l, F r a n k l i n R o b e r t
an American citizen who worked as technician at Plant Diseases, DSIR, Auckland, 1960-73. He left without warning.
He volunteered to collect in E. New Guinea, the Solomon Is., the New Hebrides, and New Caledonia in 1971.
Collecting localities. 1971. Terr. of New Guinea & Papua (Aug.-Sept.): Port Moresby (Aug. 3-11) Distr., at Varivara Creek, Brown R., Kilakilia, Sogeri, Subitawa Estate; Owen Stanley Range, Kokoda Trail (14-21, up to 1000 m); Edie Creek near Wau; Lae (21); Goroka (24); Mt. Hagen (27); Mt. Giluwe (up to 4000 m) (Aug. 29-Sept. 3); Mt. Hagen town (4-5); Mt. Lamington, Popondetta to the top (8); Konedobu, Pt Moresby Distr. (14).
Collections. 193 specimens, incl. 62 ferns, presented to Bot. Div., Christchurch, New Zealand. He might have left duplicates at Lae.

S c h l a g i n h a u f e n, O t t o
(Cycl. Coll. Fl. Males. I, 1, 1950, 469) collected on the N. coast of Kaiser Wilhelmsland (= NE. New Guinea) too, at least at Paup (or Paub) near Aitape (Nov. 1909). Specimens with printed labels in Herb. Zürich. As he accompanied a German expedition, the Zürich specimens are probably duplicates.

In Ray DESMOND's 'Dictionary of British and Irish Botanists and Horticulturists' (1977) the following additions have been found:

A r d e n, S t a n l e y
(Cycl. Coll. Fl. Males. I, 1, 1950, 22).
(1874, Heaton Norris, Cheshire, England; 1942, Brighton, Sussex, England).

A r m s t r o n g, J o h n *
(d. Jan. 21, 1847, Cupang, Timor) of Belize, Honduras. He established a Government Garden at Port Essington, N. Australia, 1838; from 1840-45 Kew collector in Timor.
Eugenia armstrongii Bth. was named after him.
Plants and letters at Kew, and ?B.M.
Biographical data. J.D. Hooker, Fl. Tasm. 1, 1859, cxvii; Rep. Austral. Ass. Advanc. Sci. 1907, 199. Already mentioned in Britten & Boulger, but evidently overlooked by author.

B a n f i e l d, F r e d e r i c k S y d n e y
(Cycl. Coll. Fl. Males. I, 1, 1950, 34).
(b. Sussex, England; d. 1967).
Biographical data. J. Kew Guild 1967, 823-824, portr.

B a r t o n, F r a n c i s R i c k m a n
(Cycl. Coll. Fl. Males. I, 1, 1950, 39).
(d. 1947).
Biographical data. Who was who 1941-50.

D a m p i e r, W i l l i a m
(Cycl. Coll. Fl. Males. I, 1, 1950, 128; Suppl. II in F.M. 8, 1974, xxviii).
(b. 1651 and not 1652).

E v a n s, G a r e t h B e v a n
(Cycl. Coll. Fl. Males. Suppl. II in F.M. 8, 1974, xxxii).
(1935, Cadoxton, Glam; 1966, Kuala Lumpur, Malaya) was educated at Cambridge; member Oxford Expedition to Cameroons, 1962; Lecturer in Botany, University of Malaya, 1965.
Ferns in Herb. Kew.
Biographical data. Times Oct. 10, 1966; Br. Fern Gaz. 1967, 364.

F i n l a y s o n, G e o r g e
(Cycl. Coll. Fl. Males. I, 1, 1950, 165; Suppl. II in F.M. 8, 1974, xxxiii).
Drawings at Kew, India Office Library.

H e n s h a l l, J o h n
(Cycl. Coll. Fl. Males. I, 1, 1950, 226).
A Mr. Henshall collected for Messrs. Rollisson, Tooting, 1852 (cf. Gard. Chron. 1852, 533-534, 581; Bot. Mag. 1854, t. 4797 and l.c. 1857, t. 4972).

L o n g, F r a n k R e g i n a l d
(Cycl. Coll. Fl. Males. I, 1, 1950, 328).
(1884, Winchester, Hants, England; d. 1961).
Biographical data. J. Kew Guild 1962, 208, portr.

M i l s u m, J o h n N o e l
(Cycl. Coll. Fl. Males. I, 1, 1950, 363).
(d. 1970). State Agr. Officer Perak 1937; Chief Field Officer Mal. Agric. Service 1946-48; Director of Agriculture Seychelles, 1948-50.
He is commemorated in *Eulalia milsumii*, discovered by him.
Biographical data. J. Kew Guild 1970, 1161-1162, portr.

N a p i e r, Sir W a l t e r J.
(Cycl. Coll. Fl. Males. I, 1, 1950, 380). (1857-1945).
Biographical data. Who was who, 1941-50, 834.

R i c h a r d s o n, J o h n M a t t h e w *
(c. 1797-1882) was transported to Australia in 1822. Employed in Botanic Garden Sydney; accompanied John Oxley as plant collector in Queensland, 1823 and 1824. Settled on Melville I. near Darwin, 1825-28. Collected plants in Timor, 1826. In 1836 botanist and collector on T.L. Mitchell's expedition along Murray R., Australia.
Hibiscus richardsonii Sweet was named after him.
Biographical data. J. Proc. R. Soc. N.S.W. 1908, 117; Vict. Nat. 1908, 112 and l.c. 1948, 200; Austr. Dict. Biogr. 2, 1967, 377.

R o x b u r g h Jr, W i l l i a m
(Cycl. Coll. Fl. Males. I, 1, 1950, 450; Suppl. I in F.M. 5, 1958, cccxv).
(d. Sept. 21, 1810, Padang, Sumatra).

S a n d e r s o n, A r t h u r R u f u s
(Cycl. Coll. Fl. Males. I, 1, 1950, 459).
(1877, Bradford, Yorks, England; 1932, Austwick, Yorks, Eng-

land) with Rubber Growers' Association Malaya, 1918-31; later Rubber Research Institute.

Biographical data. Naturalist 1933, 127-128; Proc. Linn. Soc. 1932-33, 200-201.

S t e p h e n s, A r t h u r B l i g h
(Cycl. Coll. Fl. Males. I, 1, 1950, 505).
(d. 1908, Taiping, Perak, Malaya).

Biographical data. Agr. Bull. Str. & F.M.S. 1908, 66-67.

W i l c o x, J a m e s F o w l e r
(Cycl. Coll. Fl. Males. I, 1, 1950, 575) collected plants in New Guinea with his son J.C. Wilcox, which were sent to F. v. Mueller in Melbourne.

Marelaan 55 M.J. van Steenis-Kruseman
Oegstgeest, Netherlands

* an asterisk marks a new entry for the Cyclopaedia.

THE LARGEST DICOTYLEDONOUS SEED IN THE WORLD

In a recent issue of the 'Bean Bag' Dr. Cowan claimed that the largest Dicotyledonous seed and embryo would be the seed of the American Mora oleifera (Leguminosae).

A close competitor is found in Malesia, viz. the seed of ironwood, Eusideroxylon zwageri T. & B. of the Lauraceae, of which the 1-seeded fruit may attain 16 by 9 cm, with a very heavy embryo, which may weigh one kilogram according to communication of Dr. Kostermans.

The longest solid seeds (embryos) are probably found in some species of Mangifera (Anacardiaceae) which are, however, less heavy than the aforementioned, reaching c. 20 cm.

Also very long seeds are found in for example Alsomitra macrocarpa (Cucurbitaceae), but here most of the length is occupied by flimsy wings.