VI. MISCELLANEOUS INFORMATION

(continued from page 2189)

a) Research and Publications:

A Weed Flora of Samoa has been started by Mr. Art W h i s t l e r at Honolulu, where he is also revising Christophersen's Flora of Samoa. These manuscripts will be concluded before long; Mr. Whistler hopes to continue his work on Samoa, and to produce a few things for popular use, to be illustrated with photographs. The island will remain a focus of interest for the Bishop Museum in the next years.

Monographia Cormophytarum Sinicarum. A project to publish an iconography of Chinese Cormophyta in 5 volumes. Vols. 1 to 2 contains descriptions of nearly 4000 species. The complete work will deal with some 10,000 species. The text is in Chinese and Latin. The illustrations are of excellent quality. They are simple but very effective and often very artistically drawn line drawings of the general habit of the plants, with additional analytical details. The pictures are very useful for rapid identification. Vol. 1: Bryophyta, Pteridophyta, Gymnosperma, and the archilamydaceous families Casuarinaceae to Hernandiaceae in Engler's system. The second volume has the sequence Papaveraceae through Cornaceae. Standing orders DM 320 are invited by Otto Koeltz Antiquariat, P.O.Box 129, D-624 Koenigstein-Ts., West Germany.

"A Partial Flora of the Society Islands: Ericaceae to Apocynaceae" by Martin L. G r a n t, F.R. Fosberg, and Howard M. Smith, has just appeared as Smithsonian Contributions to Botany no. 17, 85 pp. This was a manuscript completed by Dr. Grant in 1936 but never published. After Grant's death in 1968 this came, with Grant's other Pacific materials, to F.R. Fosberg. It was updated as to nomenclature by Fosberg and Smith and the chapter on history of Society Is. botany rewritten by Smith. The taxonomic judgements remain those of Grant.

A comprehensive list of the Rare and Endangered Species of Hawaiian Plants has been prepared by F. R. F o s b e r g and Derral H e r b s t and is being published by the Pacific Tropical Botanical Garden as the first number of its new serial, Allertonia.

Reproductive Biology of Fruit Trees. Early in 1973 Dr. N. P r a k a s h & Dr. E. S o e p a d m o received a grant for basic botanical investigation of local fruit trees in Malaya: taxonomy, ecology, distribution, pollination, embryology, breeding systems, cytogenetics, and dispersal. The genera Artocarpus, Baccaurea, Durio, Garcinia, Lansium, and

Nephelium were taken in hand. Malaysian biology students are involved.

Reproductive Biology of Rain Forest Trees. This is a joint project between Aberdeen and Kuala Lumpur universities, to study the process of diversification, especially in groups of trees with a commercial potential. Six post-graduate scholarships are awarded for 3 years, the whole program is to last 5 years or longer. Support is given by the above universities, as well as by the Leverhulme Trust Fund, the U.K. Natural Environment Research Council, the Royal Society of London, and the Carnegie Trust for Scottish Universities. Academic staff on the project are Drs. P. S. A s h t o n, J. I. Furtado, Kwiton Jong, D.W. Lee, S.S. Lee, S.M. Lim, A.G. Marshall, J.D. Matthews, N. Prakash, F.W. Robertson, E. Soepadmo. So far 5 scholarships have been awarded, for Flowering biology and fruit development of under storey genera; ditto of Emergent dipterocarps; Biochemistry of genetic variability of some dipterocarps; Cytology and embryology of the same; ditto of Xerospermum and other under storey fruit species.

Chemo-taxonomy in Legumes. Dr. David L e e at Kuala Lumpur is surveying the phytohemagglutinins, which have a medicinal potential for cancer therapy. Dr. Lee is also studying enzyme markers and isoenzymes in populations of Leptospermum (Myrt.) from Mt. Kinabalu. A student of his last year worked on Parkia speciosa, Pithecellobium jiringa and other taxa.

Wild Flowers of Thailand. A book under this title, edited by Dr. Tem S m i t i n a n d and prepared by the Royal Forest Department staff, is expected from the press early in 1975. It will have c. 200 pages, and gives colour photographs with text in Thai, and to each species a summary in English. The price is about US$ 8 post free; it can be ordered from the Herbarium, Royal Forest Department, Bangkok 9.

The Science Association of Thailand plans the issue of a new periodical to communicate results of scientific research in Thailand; the language will be English. For subscription and exchange contact the Secretary of this association, Chulalongkorn University, Bangkok.

Flora of Thailand Volume 2 part 3 is in the press, comprising the Magnoliaceae by Hsuan Keng, Smilacaceae by Tetsuo Koyama (of NY), Stylidaceae and Sphenocleaceae by Kai Larsen, Podocarpaceae and Gnetaceae by C. Phengkhlai, Portulacaceae by R. Geesink. The text will be illustrated with line drawings.

The Orchidaceae are being revised by G. Seidenfaden, precursory work was published in Dansk Bot. Ark.; Coelogyne is now in print. Calanthe and Cleisostoma are under study.

Handbook Flora of Papua New Guinea is now in the making at Lae, to be printed at Melbourne University Press, well comparable in scope and style with the Flora of Thailand, but profusely illustrated. In fact, artists at Lae have prepared over the years some 1400 line drawings, after dried and fresh material, and it is the intention to publish one figure for each genus, however small, and in the larger genera for every 6 or so species. The editing is done in Australia with Helen Aston's book on Aquatic Plants of Australia (1973; reviewed on page 2208) as a model. Volume 1, already in the press, will contain 14 families, in optional sequence, among them Combretaceae and Myristicaceae. All of these were prepared by Lae botanists, but if a specialist elsewhere has a family in hand the National Herbarium at Lae welcomes his cooperation.

For precursory matter emanating from these studies, a channel has been found in the Contributions of the Australian National Herbarium, Canberra. A large manuscript on the Papua New Guinea Elaeocarpaceae by M. J. E. C o o d e, as a precursor to the treatment in Volume 2 is currently being considered together with smaller papers. The Botany Bulletin will continue to carry botanical studies of other scope, like E. E. H e n t y 's Weed Flora, the Dictionary of Generic and Family names, and the Flora of Mount Wilhelm.

Impatiens for gardens. Mr. H. F. W i n t e r s, Plant Genetics Institute, Agricultural Research Service, USDA, Beltsville, Maryland 20705, U.S.A., who collected ornamentals in Papua New Guinea (page 2008) reports on the growth of his harvest (see Bibliography). He mentions the living collection Mr. John Lowien had at Mt. Hagen, from which he could take material as well as from the field. More than a hundred items were distributed to nurserymen and scientists. Some specimens are cited, and chromosome numbers given. Response to day-length differs widely. We hope that work will be continued.

New catalogue of Kew Library available. The whole card index to the Kew Library has been reproduced, on durable paper, well-catalogued, not annotated; date of conclusion not mentioned. Publisher: G.K. Hall, Boston, Mass. There are two companion series, both anonymous:

Author Catalogue of the Royal Botanic Gardens Library, Kew, England, 5 vol. Number of items calculated at 100,410. Price US$ 375.

Classified Catalogue of the Royal Botanic Gardens Library, Kew, England, 4 vol. In volume 4, Floras and Travel are included. Subject order adapted to the needs of the Kew staff. Much arranged to Dewey Decimal Classification, taxa to Bentham & Hooker, Floras to the Kew-adopted geographical division. Number of subjects calculated at 6550, number of items at 64,680 (some older material not classified). Price US$ 297.

Since pamphlets and reprints have been included, the work is most valuable as a key to taxonomic literature. The Kew holdings of periodicals have not been listed, but can be found in the World List of Periodicals, and an offset 'Royal Botanic Gardens / Kew / Catalogue of periodicals', 118 p. appeared in May 1971, apparently home-published.

Heyne killed. The plans for an English edition of 'De Nuttige Planten van Indonesië' will not materialize. The Indonesian organizations LIPI and Bappenas supported plans for the work (see page 2170) that was to be executed by staff of Bogor and Wageningen. The new minister for International Technical Cooperation in the Netherlands, however, being of the opinion that a work of this nature "could hardly be seen as being of benefit for the Indonesian population as a whole" was unwilling to accept the plans which were subsequently abandoned. He must have had bad advisers.

Tree Flora of Malaya. For volume 3 the Myrtaceae, Icacinaceae and Moraceae have been written up by Mr. K. M. K o c h u m m e n, the Violaceae, Ochnaceae, Ericaceae by Dr. F. S. P. N g.

Manual of Malayan seedlings. Dr. F. S. P. N g at Kepong has so far germinated seedlings of 120 tree species in 45 families. He hopes to continue.

Book on 'Tropical rain forests of the Far East' is forthcoming, written by Dr. T. C. W h i t m o r e, and published by the Clarendon Press, Oxford. Number of pages c. 400, with many photographs and line drawings.

The chapters deal with: Introduction; Forest structure; The forest environment: climate; Seasonal cycles in plants and animals; Seed dispersal and seedling establishment; Growth of seedlings into trees; Ecological basis of rain forest silviculture; Growth rates and forest yields; Forest environment: soils; Dryland rain forests; Wet-land rain forests; Monsoon forest formations; Animal life and forest formations; Conifers in the forests; Variation within the tropical lowland evergreen forest; Mountain rain forests; Man and the Tropical rain forest; Secondary forest and shifting cultivation; Looking ahead.

Pacific Plant Areas III is expected from the press at the same time as the present issue. It will cost Dfl. 75 (= c. US$ 30) and can be ordered from the Librarian, Rijksherbarium Schelpenkade 6, Leiden, Netherlands. It is not for exchange. Execution is in much the same manner as Volume 2. Editor is M. M. J. v a n B a l g o o y.

In the Introduction he argues why the Bibliographic section is continued beside the Index Holmensis: the latter is far from complete, and limitation of PPA to taxa occurring in

the Pacific Basin proper (like before) makes consultation easier. And, it could be added, the methodical annotation which the Index Holmensis does not have, reveals the value of each map. Continuation of the Map section after Van Balgooy's thesis Plant Geography of the Pacific (1971) seems justified since the former presents a more detailed picture of distribution, and each map is accompanied by an informative text on habit, ecology, dispersal, and other particulars.

Most of the volume is filled by 'Bibliography of Pacific and Malesian Plant Maps of Phanerogams, 2nd Supplement' by Mrs. M. J. v a n S t e e n i s - K r u s e m a n, which has c. 3600 entries (in Vol. 1 there were c. 3150, in Vol. 2 c. 575).

The maps, worked up by a number of specialists (many were done by E. F. d e V o g e l) are 69 in number, the total now being 243. There are quite a few of whole genera: Adenia, Agatea, Archidendron, Aristotelia, Balanophora, Citronella, Curculigo, Drapetes, Engelhardia, Eurya, Gunnera, Gyrocarpus, Hernandia, Hollrungia, Inocarpus, Keysseria, Kingiodendron, Knightia, Lagenophora, Lagunaria, Lindenia, Lophopyxis, Maniltoa, Maranthes, Myristica, Nesogenes, Parkia, Passiflora, Pemphis, Persoonia, Pimelea, Pterostylis, Tetracera, Tetrapathaea, Treubia, Trimenia, Uncinia; the others are species, including a number of ferns - there is an occasional Bryophyte. At the end, there is a Cumulative Index.

Christmas Island. After H.N. Ridley's botanical work (J. Roy. Soc. Str. Br. 45, 1906, 156-271) on the tiny phosphate island in the Indian Ocean 400 km S of Java's SW point, not much was added to our knowledge, but from May to September 1968 Mr. B. A. M i t c h e l l, of the Forest Research Institute, Mt. Gambier, S. Australia, made a comprehensive survey of the tree flora for timber exploitation. His concise report The forest flora of Christmas Island, Commonw. For. Rev. 53 (1973) 19-29, incl. map, 3 phot., gives interesting recent information. See also page 2363.

It gives a sketch of the brief history of the 52 sq.mi. island with its rich deposits of guano, for the exploitation of which the Christmas Island Phosphate Company was formed in 1897. There are now 3000 people living; only about 1965 was the large-scale penetration of the forest begun. Mitchell could distinguish between a Terrace forest and a Plateau forest. For the former, a list of 36 tree species is given, presumably all thicker than 30 cm. He thinks that new discoveries can be made in more inaccessible places.

Pure stands of buttressed Pisonia grandis to 25 m tall were recorded (photograph); occurrences of Barringtonia racemosa, Erythrina indica, Inocarpus, Melia, Gyrocarpus americanus and the endemic palm Arenga listeri are mentioned. The Plateau forest on the deep soils is poorer, dominated by

Eugenia gigantea (endemic), Planchonella nitida, and Hernandia ovigera of over 30 m with a clear bole of 20 m, cited as another species that elsewhere makes only a small stunted tree (although in the Flora of Java it is recorded as a 20-30 m tree). Many other tree species of lesser importance are cited, and some herbs in relation to the impact of man.

British Phosphate Commissioners are cited as "helpful and sympathetic to the need to conserve the last remaining breeding area of Abbott's booby endeavouring to save as much forest as possible when clearing areas through which nests are scattered, and it can be anticipated that extensive areas of inaccessible Terrace forest will remain inviolate as breeding areas for the red-footed boobies, the red- and white-tailed tropic birds, the Christmas Island and great frigatebirds, as well as the various landbirds. In addition the Commissioners are considering means whereby forest conditions can be re-established more rapidly on previously mined land, and pilot trials to this end have been commenced."

Eleven references are cited, including those on birds.

Evolution of Gramineae in tropical Asia. Dr. R. O. W h y t e, P.O. Box 131, Kota Baru, Kelantan, Malaysia, is engaged in work on this subject. He holds that the drift of the Indian subcontinent from near Madagascar towards the Himalayas coincided with an increase of drought, which greatly reduced the original rain forests and paved the way for open country plants like grasses. An analysis of the course of this process is due for publication in Biotropica. Dr. Whyte will extend his investigation to the mosaic pattern of grass distribution in E. and SE. Asia, analyzing the various migration routes.

As for cultivated grasses he concentrates on the period when annual prototypes of the modern cereals of Asia first arose rather suddenly from perennials, due to climatic changes resulting from the Himalaya uplift, which to the present day produces new annual genotypes. This was announced in the Indian Journal of Genetics and Plant Breeding vol. 33A (1973). In 1975 the same journal will carry a paper on the origins of annual food legumes along similar lines.

Leiden Botanical Series will be the name of a new series of books in the same range of subjects as Blumea and Persoonia, but consisting of larger contributions which are monographic in character. They will be published at a rate of one, perhaps two a year on average, for sale but not for exchange, and can be ordered from Leiden University Press, Pieterskerkhof 38, Leiden, Netherlands.

The first book will be 'Revision of the Symplocaceae in the Old World / New Caledonia excepted' by H. P. N o o t e b o o m, to be published in June 1975. The number of pages is

estimated at 336, the price at Dfl. 90 (equals approximately US$ 36).

The General Part discusses: Position of Symplocaceae in the Angiosperm system; Distribution, recent and fossil; Palynology; Chromosome numbers; Phytochemistry; Anatomy; Seedlings; Morphology. The genus cannot be divided beyond two subgenera, subg. Hopea extending further to the N than subg. Symplocos and forming a more solid block of web-related species. The number of species dealt with is 111, of which 21 are new; many infraspecific taxa are recognized. Literature, typification, description, distribution under citation of selected collections have been given. Some hybridization is suspected. Several keys are given; these were made with the aid of a computer. The material examined amounts to well over 8000 numbers, Brand in 1901 having 700. A Flora Malesiana Identification List will follow.

Philippines: manuscripts finished. Tricyrtis imeldae, a New Philippine lily; An archeological fruit, Psidium; Ethnobotany of the Tasaday, by Mr. H. G. G u t i e r r e z, Moss Flora of the National Botanic Garden, Philippines, by Dr. R. d e l R o s a r i o; Species Ulanosae, by Dr. E. Q u i - s u m b i n g; Botanical expeditions in the Philippines, 1953-1972; Studies on the vegetation of southern Samar; Soil-binding grasses, by Mr. Domingo A. M a d u l i d.

Wallich herbarium and Catalogue on microfiche, is available with IDC, Poststrasse 14, Zug, Switzerland, at Sw.Fr. 1980. In a booklet, a brief sketch of Wallich's life is given, followed by a list of Collectors in his herbarium, with abbreviation if any, chief localities, and reference in the Catalogue. Also a list of other herbaria incorporated into the East India Company herbarium is given, and provenances of cultivated material in the latter; indications of corrections, additions, and indices in the Catalogue, and an explanation of the new (bordered) labels on the sheets.

Botaniska Notiser wants to expand to c. 600 pages per annum, and hopes to attract contributions relating to plant taxonomy in the broad sense of a more international scope. It is open to members of the Lund Botanical Society; one can become a member for US$ 20 a year and then receive the journal free of charge. Please contact the editor Dr. Gunnar Weimarck Dept. of Plant Taxonomy, Ö. Vallgatan 18-20, S-223 61 Lund, Sweden, who will be glad to send further information.

The Kew Record of Taxonomic Literature relating to vascular plants for 1971, announced and explained in Taxon 23 (May 1974) 381-386, was received at the Rijksherbarium (through delays not Kew's fault) in December 1974, and will be reviewed in the next issue. Number of pages 394, price £ 14.00.

At Los Baños, Mr. Benito C. T a n submitted a thesis on Sporangial distribution and sporal morphology of Philippine Selaginella, 94 p., 45 phot. (1974) for M.Sc. He examined 39 species, and found six patterns, which occur in combinations in the various species. In the spores four basic types were distinguished, for megaspores and for microspores, occurring in groups of species, which are keyed out. The Philippine species were divided into 10 groups, which were compared with v.A.v.R.'s; differences were found on two points.

Mr. Tan (born at Manila, 30 August 1946, now instructor in botany at Botany Department, Los Baños) also made collections and hopes to continue work in pteridophytes.

Ceylon: miscellaneous notes. In 1972, Ceylon was proclaimed a republic under the name Sri Lanka. Scientists may prefer to retain the name Ceylon, in publications and on labels. The island is c. 400 by 225 km. The so-called Up Country (highest point c. 2500 m) intercepts the monsoon rains, hence in the SW the months October to March are dry, in the NE, the months April to September. Precipitation ranges from 1¼ m in the NE plains to 5 m in the mountains and SW plains. J.D. Hooker in 1904 estimated the flora at 2800 species, 780 of them endemic, with 23 endemic genera. There is a floristic relationship with Malesia. After Alston in 1931 produced a Supplement to Trimen's Handbook of the Flora of Ceylon, botanical work remained incidental, most important being probably E.B. Worthington's collection.

In 1967, at the suggestion of Prof. B. A. A b e y - w i c k r a m a, a proposal was drawn up by Dr. F. R. F o s - b e r g to get Trimen's Handbook revised under the Smithsonian's Excess Foreign Currency Program. Specialists were offered a free collecting trip to Ceylon if they would write up a family for A Revised Handbook to the Flora of Ceylon. Of the material to be collected, one set was for Washington, one for Peradeniya, while the other sets were at the disposal of the collector. In 1968, the program started, under the direction of Dr. Fosberg, in collaboration with the local authorities. The project will probably run until 1977, but inflation is eating up much of the funds now.

In the Botanical Garden are now two Herbarium buildings, one for the old collection (which must not be taken out), the other for the Flora of Ceylon Project collections, where the incoming material is kept. The University also made a room available, but the whole PDA-Herbarium is under the Department of Agriculture. According to Dr. Kostermans, things sometimes went wrong in the mounting of specimens, with the result that not all labels have been attached to the collections where they actually belong.

Worthy of special note seems the observation of Dr. Kostermans that in the Old Herbarium a collection is kept of

colour plates of Ceylon plants that Thwaites had made by two local artists, in the manner of Roxburgh's Coromandel ones. He saw many hundreds, perhaps thousands of them, very well executed but never published. One served him to determine the presence of endosperm in a Calophyllum seed. It may well be that each of the species in Thwaites's Enumeration is represented by such a plate.

A channel for papers on plants of Ceylon is the Ceylon Journal of Science, Biology, of which volume 1 was started in 1957, result of a combination of the three sections A, B, C of the Ceylon Journal of Science which had 13 volumes during the period 1901-1956. Editor is Professor Hilary Crusz, Dept. of Zoology, University of Sri Lanka, Peradeniya Campus, Sri Lanka. The 9 volumes hitherto published consist of two instalments of about 80-100 pages each, well-executed. They can be ordered from the Librarian, University of Sri Lanka, Peradenyia, Sri Lanka, but is not easy to obtain by mail, and a more effective way seems to buy them on the spot; the cost of all the back numbers equals approximately US$ 40. The contents are mainly descriptive and most papers deal with animals: those on plants have been listed in the Bibliography of the present issue, under Abeywickrama, Amaratunga, Dassenayake, Ekanayake, Fosberg, Inamdar, Kachroo, Kannangara, Kostermans, Mueller-Dombois, Sledge, and Wiens.

Of the Revised Handbook itself one issue has now been published; see Reviews under Abeywickrama. Those who look for recent literature on Ceylon plants be referred to the papers by Crusz (cited below) and Mueller-Dombois & Perera (see Bibliography), where some references are given. Much can also be traced through the UNESCO Kandy Symposium 'Study of tropical vegetation' (1958).

Forthcoming is a book by M. Domrös, The agroclimate of Ceylon, c. 250 p., dealing with Climate and land use, Crop potentialities, and Land use for the regions. It can be ordered from Steiner Verlag, Box 743, Wiesbaden, Germany, for c. DM 58. A 'Motor Map of Ceylon' 1 : 500,000 is available with the Survey Department.

The project has also focused fresh interest on conservation, expressed in a paper by H. Crusz, Nature conservation in Sri Lanka (Ceylon), Biol. Conserv. 5 (1973) 199-208, 1 fig. This paper gives a brief physiographical introduction, lists the main animals, and gives a chronology of conservation activities, which resulted in a reserves area of 3850 sq.km. Recently, Dr. A.J. Kostermans considered to propose Hiniduma Kande = Mt. Haycock (650 m) N of Galle in the S part of the island, with surrounding forest, as a nature reserve. The name means 'misty mountain'; it is the highest point in the most humid portion of Ceylon that is still under mixed rain forest, a tract of c. 10 km. Endeavours by Kostermans to

enlarge the Kottawa Arboretum near Galle were successful and new fences to enclose the enlargement are being constructed. These seem good steps, for although the Buddha 2500 years ago already said (quoted by Crusz): "The forest is a peculiar organism of unlimited kindness and benevolence that makes no demands for sustenance and extends generously the products of its life activity; it affords protection to all beings, offering shade even to the axeman who destroys it", the forest area (of which Trimen in volume 5 gave a map) is diminishing fast, at the hands of Ceylonese lumber cooperations with Canadian logging experts.

As Dr. Fosberg wrote me, several manuscripts for the Revised Handbook are now in preparation; these will be listed when published. The Orchids are now in the press. Out of the 195 families in Trimen, 30 are still unassigned and available for revision.

The most durable result of the project, no doubt, will be the herbarium materials gathered during the large-scale collecting to which it stimulated, thanks also to the mobilization of local assistance. The curator of the Rijksherbarium observed that Ceylon duplicates nowadays seem to stream in from all sides. By May 1974, Dr. Fosberg noted that 12,000 sheets, labelled and mounted, had been turned over to the Peradenyia Herbarium. Certainly a number of the botanists had not yet distributed their material; Dr. Kostermans, for instance, only just finished making available another 3,000.

The names of the botanists who by end 1974 had collected in Ceylon, with abbreviation of their institution, are the following:

Ashton (ABD)
van Beusekom (L)
Clayton (K)
Corner (CGE)
Davidse (MO)
Fosberg (US)
Gould (TAES)
Grierson (E)
Hepper (K)
Hoogland (CANB)
Huber (MER)
Kanis (CANB)
Kostermans (BO)
Koyama (NY)
Kundu (CAL)
Lazarides (CANB)
Macnae (Witwatersrand)
Maxwell (S.Illinois)
Meijer (KY)
Moldenke (NY)
Read (US)
Robyns (BR)
Rudd (US)
Sachet (US)
Soderstrom (US)
Stone (KLU)
Theobald (HAW)
Tirvengadum (P?)
Wheeler (USC)
Wiens (UT)
Wirawan (HAW)

It is too early to judge the novelties emerging from the project, or to see what new plant-geographical conclusions can be drawn. The project was quickly conceived and did not materialize without improvisation or anger. Nonetheless, it has demonstrated once again that all taxonomy starts in the field, and that the offer of an opportunity to collect attracts botanists to discharge their energy and knowledge. — M.J.

b) Herbaria, Gardens, Organizations:

Institute for South Asian Studies, W. Germany, or officially named Südasien-Institut, 15 Schloss Wolfsbrunnenweg, 69 Heidelberg, B.R.D., takes an geographical interest in Malesia and its ecology in the broad sense. It was established in 1964 with the appointment of Dr. U. S c h w e i n f u r t h as professor of geography. Each term a full course is taught, a seminar given (in 1974/75 on plant geography) and a discussion of recent literature. Because air photo interpretation, cartography, and languages are involved in the training, it is mainly post-graduate. Its library collects works on Himalaya, Ceylon, Malaysia, Indonesia, Philippines, and Papua New Guinea. Staff members go out for field work; so Dr. K. Hausherr worked for 1½ years in Luzon and Mindanao on forest management; Dr. J. Metzner, after work in eastern Timor, made a geo-ecological analysis of western Sumba. Professor Schweinfurth himself recently made a major contribution to Troll's symposium on the 'Geo-ecological Relations between the Southern Temperate Zone and the Tropical Mountains' of the Akademie der Wissenschaften in Mainz, end November 1974. He then hopes to spend whatever time he can spare from administration on digesting data regarding ecology, land use, vegetation, and climate from New Guinea, Stewart I., and Ceylon. A manuscript that he compiled together with H. Schweinfurth-Marby, in English, on the Exploration work of F. K i n g d o n W a r d (annotated bibliography and map of his travels) is ready for the press but held up for lack of funds. So is a manuscript by J. Metzner on Man and Environment in Eastern Timor. Recently published by U. Schweinfurth et al. was Studies in the Climatology of South Asia, A rainfall Atlas of the Indo-Pakistan subcontinent based on rainy days.

Andaman-Nicobar Herbarium (contd.). The Circle has now 23 staff members, including 4 scientists. Exploration has been carried out in different parts of South Andaman, Middle Andaman, Car Nicobar and Katchal I.; altogether the islands number 204. The total amount collected so far is ± 2500 field numbers. The Herbarium has now ± 1500 mounted specimens, most of which have been identified. During the last two years a new species was recognized in Macaranga, Miliusa, and Eulophia. About 35 species previously known from Malesia only were newly recorded for the islands. A limited number of duplicates are available for exchange for specimens from Burma, Thailand, Malaya, Sumatra, and Java.

Manila Herbarium (PNH) moved its exhibition site to the Tourism building at Luneta Park, while the Botany Division of the Museum (the Philippine National Herbarium) remained in

Herran Street, re-named Pedro Gil Street. New staff are Mr. W. V e n d i v i l, research assistant, and Mr. M. Atacador, artist. A new vehicle and other equipment was obtained as part of Japanese reparation payments.

Brisbane. Floods hit Queensland and northern New South Wales to an unknown extent in March-April 1974. They were highest since 1893 and water was more than 2 metres deep in the Botanic Gardens. Fortunately the site of the new Herbarium at Indooroopilly was high and dry and did not suffer from the heavy persistent rains. Several staff members suffered badly at home. A total of 15.000 houses was submerged in Brisbane, due to the colossal rise of the Brisbane and Bremer rivers. Water stagnated in NW. Queensland for an unprecedented length of time and lakes originated hundreds of miles in extent.

In contrast to this North Island of New Zealand suffered from an unprecedented drought, the green island becoming brown and yellow.

McClure's bamboo plantation. This plantation which the late Dr. F. A. M c C l u r e established in the campus of Lingnan University, and which Dr. Holttum saw there still in 1963, has been transferred to the Botanic Garden of the Botanical Institute for South China, Canton.

Herbarium Paul Aellen is now administered by a Foundation, director Prof. Dr. H. Z o l l e r. Onwards of 1 February 1974 it is housed in the Botanical Institute of the University, Schönbeinstrasse 6, CH-4056 Basel, Switzerland.

Herbarium Australiense (CANB), P.O.Box 1600, Canberra City, 2601 A.C.T., Australia. The most important event was the move in October 1974 to the new permanent building close to the Black Mountain Library of CSIRO, at a most beautiful site. For the time being, space is very limited and there is no provision yet for guest scientists, but a second stage of construction has been planned, to double the present capacity. The staff now consists of Dr. Hj. E i c h l e r as Curator (Hydrocotyle, Zygophyllum, Ranunculaceae, nomenclature); Dr. Nancy T. B u r b i d g e (Australian plant name index, Flora of Australia text preparation, catalogue of taxonomic literature in Australian libraries); Mr. M. G r a y (Australian mountain flora, naturalized weeds); Dr. T. G. H a r t l e y (Rutaceae), Dr. A. K a n i s (Amaranthaceae, Mimosaceae), Mr. M. L a z a r i d e s (Grasses); also Messrs. L.G. Adams, E. d'Arnay, K.P. Ashman, L.A. Craven, M.L. McGregor, R. Pullen, H. Toŕssell, A.D. Chapman, H. Hewson.

Unfortunately, botanical research on Papua New Guinea was discontinued in mid-1974; this also meant the loss of two

technicians. Emphasis in research has now been directed to the flora of Australia, while the expertise of some members of the staff in the tropical flora the Herbarium maintains its particular interest in tropical Australia and adjacent islands, and it is hoped that close cooperation can be maintained with, in particular, Lae and Leiden.

University of Malaya Botanic Garden, Kuala Lumpur, was officially opened on 26 August 1974 by the Chancellor of the University, Her Majesty the Queen of Malaysia. The Garden occupies a site of nearly 90 acres within the University campus and consists of a valley system ringed by low granite hills to a few hundred feet high. Mostly under old rubber trees the development of the Garden will be slow but numerous lowland species should be suitable. Currently a search for a permanent superintendent is under way. International assistance is also being sought. Immediately following the opening ceremony Dr. Burgers of UNESCO (which organization helped to sponsor the occasion) helped to open a Symposium on Tropical Botanic Gardens (see next section).

The Papua New Guinea National Herbarium. In late 1973 the Trusteeship Territory of New Guinea and the Australian Territory of Papua became effectively self governing as Papua New Guinea. Early anticipation that full independence would be achieved in 1974 have not been realised but there has been steady progress by the Government toward this goal. A constitution is now in the final stages of adoption. The Chief Minister Mr. Michael Somare now speaks of June 1975 as the hoped for date for Independence. Other informed opinion thinks September 1975 more realistic.

The present Government operates on a Westminster type system and the constitution provides for continuation of this form. A rather large cabinet includes an inner group of nine Ministers as the action body. This inner cabinet includes the Minister for Natural Resources, Mr. Bruce Jephcott, himself involved in the pastoral industry and an agricultural scientist by training. This Ministry is responsible for the Dept. of Forests and the Fisheries section of the Dept. of Agriculture.

A recent statement on Forest Policy accepted by Cabinet from the Ministers refers specifically to the National Herbarium and in association the National Botanic Garden. Among the responsibilities of the National Herbarium is the production of a Handbook Flora of Papua New Guinea (see Research and Publications). There have been recent increases in the staffing establishment. Lower level positions have been relatively easy to fill but great difficulty exists in attracting suitably qualified and experienced staff to the higher level professional and administrative positions. The first Papua

New Guinean to graduate as a botanist is expected to complete his studies in late 1975. He will then join the staff of the National Herbarium.

The present Assistant Director, Botany, Mr. John S. W o m e r s l e y reaches retiring age as a public servant employed under the Australian Staffing Assistance Group in June 1975. After a world tour including the International Botanical Congress John is expecting to continue as an employee of the Papua New Guinea Government.

Present programmes of the Division of Botany are directed almost entirely toward getting as much material published as possible.

While field work will go on vigorously, the publication program on the flora of the country, i.e. eastern New Guinea, the Bismarcks and Bougainville (including western New Guinea and the Solomons where convenient), has been streamlined and expanded.

It is the firm intention to attract native students to the National Herbarium. The newly formed Faculty of Forestry at the Papua New Guinea University of Technology at Lae is expected to produce students having botanical interests.

Ecological studies particularly on Nothofagus which has become a significant merchantable tree are being carried out at Mt. Giluwe and at the Nakanai Plateau, New Britain. A hut to accommodate visiting botanists has been built at Onim, Mt. Giluwe, altitude 7,500 feet. Use of the hut is limited to genuine scientists and is not for use by mountain climbing parties. A small high altitude botanical garden will be established close to the hut.

Centenary Copenhagen Botanical Garden, was commemorated on 9 October 1974. To mark the occasion a 'Beretning om Botanisk Haves virksomhed for arene 1972-1974' was issued, with in its English section a number of biographical sketches and reminiscences, and other papers relating to the task of a botanical garden.

Kuching Herbarium (SAR). The third extension, a double-storey building, was completed in May 1974. All the monocots and miscellaneous collections were moved into the ground floor store room. The rooms upstairs are occupied by the Silviculturist and temporarily by the National Parks Officer.

The Herbarium at Caen, France (CN), the subject of a critical note in this Bulletin (pages 1270-1271), because of the neglect in which its collections were found, has wisely transferred 250,000 specimens of phanerogams and pteridophytes to Paris-Phanérogamie (P). Among the tropical collections are those of L e n o r m a n d (all countries), D u m o n t d' U r v i l l e (all countries), and V i e i l l a r d (New Caledonia).

Aarhus Herbarium, Denmark (AAH) has now about 20,000 sheets from Thailand, most of these collected under direction of Prof. Kai L a r s e n. A set of early K e r r specimens was purchased from a Herbarium which did not want this material (rumors are that this is the TCD-Herbarium, Dublin, where Kerr attended college. M.J.). A complete set of Mr. J. S. M a x w e l l 's collections was obtained, and agreements were made with this botanist for the future.

Botanical Museum, Copenhagen (C). Dr. Bertel H a n s e n kindly sent me the following note of correction: "After the retirement of professor Thorval S o r e n s e n on 1 September 1972 (he died 21 June 1973), there is no director any more for the Botanical Museum and Garden. In December 1972 I was elected Keeper after Dr. S k o v s t e d who retired on 30 November 1973; he wanted to spend his last 11 months on botany, not on administration. Professor Sorensen's professorship was split up into two, one to remain at the Museum. On 1 June 1973 professor R. D a h l g r e n took up this position. In the future the keeper must be re-elected or changed every third year under the laws of democracy."

The Geneva Herbarium goes underground. The charming building on the shore of the Lake, with some distinguished botanical heads on pedestals in front, was still crammed when I was there for a day last July, but things were already being moved into the new building. This is situated in the botanical garden across the road, higher up the slope, and looks at first sight even smaller than the old building. Actually, most of the building sits under three metres of soil, a vast system of concrete cellars, separated by fireproof doors, air-conditioned and free of dust, where the specimens are placed on movable racks. Professor J. M i è g e, who kindly and proudly showed me the place, told me that the collections thus will be protected from conventional warfare, although perhaps not completely safe from nuclear attacks.

It is amazing to realize that the whole splendid construction was financed by the City of Geneva. As Dr. Miège conceded, "it took a terrible battle", but one in which botany was magnificently victorious, so both parties are to be congratulated. Under Professor Miège, the institute has on the one hand diversified its activities: an experimental department for phytochemistry and cytogenetics has been set up; on the other hand, it has concentrated its activities, namely on Africa and the Mediterranean area in the wide sense. Loans can be obtained again from the beginning of 1976; the new address is: Conservatoire Botanique, Case Postale 21, CH-1211 Genève 21, Switzerland.

Herbarium of the University of Malaya, Kuala Lumpur (KLU). A new assistant, Miss S. L. C h o n g, joined the staff; shortly after, the 20,000th specimen was filed. The KLU-Herbarium is directing its efforts toward monocots, herbs, shrubs, climbers, ferns, thus complementing the KEPong Herbarium which specializes in trees. The collections are important enough to make it worthwile for taxonomists engaged in a monograph or revision to examine the KLU-specimens, which will gladly be made available. At the current expansion rate the 50,000 mark should be hit by about 2005.

Oakes Ames Orchid Herbarium, Botanical Museum, Harvard. We hear with pleasure that in 1974 this most important specialized herbarium has unexpectedly got extension of space. This makes it possible to incorporate some 15,000 specimens which sofar had been in dead storage and completely unaccessible.

A Gunung Leuser Field Station, North Sumatra. A report of this title, written by Dr. M. J a c o b s, Rijksherbarium, Schelpenkade 6, Leiden, Netherlands, has just been issued in order to awake interest and to round up financial support to establish such a station at the Gunung Leuser reserves (see page 2185). It will be the first field station in Sumatra, and opportunities for research cover an amazing spectrum. It is intended for qualified scientists of all disciplines and nationalities. A simple and workable plan has been made, with draft budget, and illustrated by a perspective drawing to show what it would look like. The cost, all in, for the first 5 years is estimated at US$ 30,000.

Copies of the report will be sent on request. A number goes to universities, museums, academies of science, societies, and other bodies and persons who may take interest in such a project. It has the full support of the Gunung Leuser Committee, and several Indonesian authorities have already welcomed the idea.

Rijksherbarium, Leiden. In mid-December, while I am preparing the Bulletin, people walk by humming Christmas songs when they return from coffee. If one goes there, the sound becomes stronger. Music is playing. Light in the spacious coffee room with the orange curtains is dimmer than usual. The tables, otherwise scattered, have now been placed side by side in the shape of a big U, covered with holly-printed paper and burning candles. A huge bell of red paper hangs in the middle, nearly over the well-decorated Picea tree. And, like every year, there is the white two feet high church with a red light inside. The music comes from a tape-recorder, which is playing during coffee and tea break. On red ribbons the Season's Greetings are pinned as they come in, every year increasing, in astonishing variety, and staff members crowd

around them examining the inscriptions and exchanging gossip.

Now that these facts are on record as a contribution to the history of the Rijksherbarium, it is fit to add a few observations on the celebration of Saint Nicholas, who in time immemorial revived three children who had been chopped and pickled to be sold for meat in times of scarcity. The eve of his birthday on 6 December is a national occasion for funny gifts and doggerel verse. About 1950, in the Nonnensteeg building, this was already an annual event at the institute, for which at morning coffee the whole personnel came together in the 'pipes drawer', the long narrow mounting room where 'speculaas' (crisp brown spicy cake with almonds) was served, and the presents arrived, mostly in surprising disguise. The longest and most witty of the poems was usually the one made by Professor L a m himself. However, as personnel increased it took more time to read all the verse and unwrap the packages, and it was almost past lunchtime when all the fun and chocolate cigarettes had been consumed. So, in the mid-fifties, it was decided to discontinue the tradition - as the saying went, with only two votes against: that of Professor Lam and of Saint Nicholas.

After the move to the Schelpenkade, the celebration was revived in a fresh form. Saint Nicholas now comes in person, accompanied by his Black Peter, on a saturday morning. In front of a huge colourful screen (prepared by the draughtsmen) a throne stands ready. When the Saint enters, majestically in red robe, white beard and carrying a bishop's staff, the children (aged 3-8) of the personnel sing their chant, Black Peter strewing candies. The holy man calls a child before him, reads from his book the item contributed by the parents, and proffers a small gift.

When this highly satisfactory event is over, it is almost time to place the Christmas tree. It is only after the New Year's round of handshaking of about 100 people working in the building (i.e. nearly 10,000 handshakes) that the Herbarium life adjusts itself to the pattern which most visitors know.

c) Symposia, Congresses, Societies, Meetings:

The Pacific Science Association will hold its 13th Pacific Science Congress in Vancouver from 18 to 29 August 1975. The theme is Mankind's Future in the Pacific; the aspects are 1) population, 2) aquatic resources, 3) energy resources, 4) land.based resources, 5) nutrition, 6) science and social science policy, 7) man's future condition.

There is a 3 day Botany program, chairman is Maxwell S. D o t y, Hawaii, on the theme Floristic needs in the Pacific Basin, both vascular and non-vascular (convener W. L.

T h e o b a l d, Hawaii; and on the theme Pacific ecosystems: a geographical analysis (convener Dieter M u e l l e r - D o m b o i s, Hawaii), to develop the basis for a natural area system in the Pacific. Botany will also be a subject of Symposium B4: Conservation of ecosystems. Speakers are A. C. J e r m y on forest ecosystems, M. M a c k a u e r on transpacific exchange of biota, K. W o d z i c k i on conservation problems of the S. Pacific, A. J. B e r g e r on terrestrial endemic island biotas, G. F. W e l t m a n on creation and management of forested natural areas.

On Conservation (chairman Lee M. T a l b o t, Washington) two symposia are planned, one on Institutional arrangements for environmental protection, and one on Rare and endangered flora, fauna, and ecosystems. One symposium (convener G. G. E. S c u d d e r, Vancouver) will be held on The origins of Pacific Island biota.

Several tours and excursions will be held. A booklet, bilingual in English and French, with all information can be obtained from 13th Pacific Science Congress, University of British Columbia, 2075 Wesbrook Place, Vancouver, Canada, V6T 1W5. The deadline for general registration is 31 May 1975.

A Flora of Thailand Meeting will be held in Aarhus just before the Leningrad Congress. Board members only.

IBP-Synthesis Meetings were held from 12 to 18 August 1974 at Kuala Lumpur, attended by 120 scientists from all over the world, to discuss the results of the IBP-program in Malaya the previous 4 years. Aspects include climatology and hydrology, aquatic and terrestrial ecosystem, primary and secondary production, litter decomposition and nutrients cycling, human adaptability, discussed in a total of 73 papers.

Royal Society Meeting on New Hebrides. From 7 to 11 October 1974 a meeting was held to discuss the results of the Percy Sladen Expedition in 1971. Chairmen were Professor E. J. H. C o r n e r and Dr. K. E. L e e. Publication will presumably be in the same manner as that on the Solomons.

Symposium on the opening of the new botanic garden, University of Malaya, was held on 26-29 August 1974 at Kuala Lumpur, and attended by c. 60 participants; some 25 lectures were delivered. As for the function of tropical gardens, Dr. E. d e G u z m a n set forth the significance of Makiling garden in the Philippines in combining recreation, horticulture, research and teaching. Mr. J. S. W o m e r s l e y emphasized the function of a garden as a complement to a Herbarium. Dr. J. D r a n s f i e l d told of field work on palms and their incorporation in the Bogor gardens. Dr. W. S.

S t e w a r t explained how in the Pacific garden at Kauai, Hawaii, endangered species are propagated. Dr. G. S c h ü - s e r of Frankfurth gave an account of rehabilitation of orchid species propagated in a garden into a forest in South America. Dr. D i d i n Sastrapradja gave a well-balanced memoir on the functions of tropical botanical gardens (already published in Berita LIPI 16, 3, 1972, 18-27). All gardens would benefit from an annex in the mountains like Cibodas.

As for research, Dr. D. E. F a i r b r o t h e r s of New Brunswick, N.J. named the tropical flora "an untapped source of phytochemical data", important for taxonomy, pharmacology, pharmacognosy, and economy. Dr. T. N. K h o s h o o told how at Lucknow, India, wild plants are tested on nutritive value and for land reclamation. Dr. E. S o e p a d m o made a plea to grow wild relatives of useful species, especially fruit trees, which all are in the endangered lowland forests. Three lectures on morphology stressed the value of having handy fresh material for comparative study of organ development. Dr. W. A. v a n H e e l of Leiden mentioned rare Flacourtiaceae endemic in Malaya in this connection.

A lively discussion centered around botanical gardens as an aid to conservation. The destruction of the genetic potential in developing countries for a quick profit was thought alarming. A botanical garden is often thought of as a refuge for endangered species, and this is also adduced as an argument for their existence. This entails the danger of inflating the value of gardens as a 'gene-bank' which may give non-biologists the peace of mind to have the forest destroyed. Dr. Francis N g of Kepong held it that just the endangered species are hard to retain. Dr. J. T. W i l - l i a m s (Birmingham) made a plea to protect whole populations. Dr. M. J a c o b s, whose paper was delivered by Dr. M. M. J. v a n B a l g o o y, attacked the fallacy that any value could be attributed to an artificial garden for conservation purposes. Thinking of a seed-bank function is ridiculous, since seeds of most rain forest species are large, vulnerable, and quickly lose their viability. It is wrong to think of threatened species when whole ecosystems are in danger. And in a botanical garden, maintenance must never end. The only effective manner of using gardens for conservation is to establish large reserves, fiercely protected, and let these take the function of gardens, free of disturbance, because of the complicated relationships of plants and animals for pollination and dispersal. Such reserves can be gradually opened up for research and demonstration, and can fulfill many purposes of gardens at a fraction of the cost. Such reserves should be assigned to universities, which thus can be entrusted with participation in the great task of pre-

serving nature, thus enhancing their responsibility and their role as nuclei of long term thinking.

Finally, the participants were taken one day to Fraser's Hill; a 4-5 day visit to Pahang was cancelled. The Proceedings of the Symposium will be printed. Thanks are due to Dr. W.A. van Heel who supplied most of the above information.

Course on Tropical Ecology and Environmental Management began 30 September 1974 at the University of the Philippines at Los Baños (College, Laguna, Luzon) with 24 trainees from Indonesia, Malaysia, Cambodia, Philippines, Thailand, and South Vietnam. Organized by UNESCO's program of Man And Biosphere, the course is scheduled to end on 15 March 1975. Numerous foreign and local scientists are giving lectures. Co-directors are Dr. R. B. A s p i r a s, Soil Microbiologist of the U.P. at Los Banos, and Dr. P. S. A s h t o n of Aberdeen, Forest Ecologist and Taxonomist.

The first ASEAN (SEAMEC) Orchid seminar is to be held at Bangkok in January 1975, organized by the Thai Government, Kasetsart University, Mr. Raphae Sakarik, deputy rector.

FAO Technical conference on Tropical Moist Forests, and the Rijksherbarium viewpoint. The rate of unplanned or poorly planned exploitation of tropical forests has increased alarmingly in recent years, and the need to develop viable utilization policy has become critical. The urgency of the problem was recognized in the last session of the FAO conference, and approval was given to convene a world-wide Technical Conference on the Tropical Moist Forests, to be held from 22 September to 3 October 1975, in Brazil. This would bring technicians, scientists and industrialists together with management executives and administrators to identify the major technical issues in defining a clear strategy on which plans of action by FAO, governments or other bodies could be based, to maximize the economic and social revenues of the tropical moist forests, specific enough to serve as the basis for a systematic, continuous and concerted plan of action by FAO, forestry institutes, universities, development agencies and donors, giving the impetus for the continuous and sustained action for the development of these forests.

The Rijksherbarium received a circular from which the above text was compiled. In reply, the director sent the following letter, on 21 October 1974.

"Dear Sir, The Technical Conference on Tropical Moist Forests, planned to be held in 1975, is a highly welcome initiative and its usefulness is beyond any doubt.

The research done at our institute is mainly in the field of plant taxonomy and thus is beyond the scope of the planned Conference. Therefore, we will not be able to contribute to

the discussions on the main topics. Nevertheless, since the Rijksherbarium is deeply interested in the flora of South-East Asia (the Flora Malesiana Project), we feel that we should express our concern for the fate of the Tropical Moist Forests.

From the information received we gain the impression that during the Conference emphasis will be laid on the development of forest industries, better exploitation of the forests, and on forestry-planning; summarizing on production aspects.

We are fully aware that a plea for a planned non-use of forests is highly conflicting with economic needs and with the need for short-term results for many countries. However, we feel that we should stress to you the need for a planned and legislated incorporation of non-use of forests in overall long-term forest policies.

The inventory of the organisms forming the tropical moist forest is far from complete, let alone the study of all aspects of every species. The extinction of these organisms would not only be detrimental to our future understanding of life in all its forms, but also leave the human race with fewer fellow-inhabitants of this globe.

The forest areas to be set aside for non-use (under conservation and protection measures) should be relatively large, because a) the community as such has to be maintained, leaving space not only for standing timber, but for all species, including pollinators, dispersal agents, and predators which are all part of the natural regulation system and which usually need large areas to maintain a healthy population; b) many species of plants have a scattered occurrence and their populations need large areas to maintain themselves (chance of pollination, etc.); c) in future the protection-areas will become smaller by all kinds of events and losses, and to start with minimal size would soon be fatal.

We have noticed that many foresters are in the frontline defending the above ideas, but we have also learned that they often are losing ground due to economic and political pressures.

The staff of the Rijksherbarium will be eager to hear about the results (proceedings) of your Conference. If you could manage to put in a discussion of planned non-use as outlined above, it would to our mind be a great asset.

With kind regards and good wishes for a successful conference, Yours sincerely, ... (Prof. Dr. C. Kalkman, director)"

The reply from FAO, by R.L. Willan, Forest Resources Division, was very amenable. Excerpts: "The point which you have raised is extremely important and must be given some emphasis by the Technical Conference if it is to consider the problem of the tropical moist forests in a balanced way."

"We have recently been conducting a joint study with the United Nations Environment Programme, entitled 'Methodology of Conservation of Forest Genetic Resources'. One of the items discussed in this study is the use of strict natural reserves in order to conserve whole ecosystems including genetic resources of the constituent species. Conservation in tropical ecosystems was given considerable emphasis in this study, of which the main author was Prof. L. R o c h e, the professor of Forest Resources Management in the University of Ibadan, Nigeria. The question of size and distribution of strict natural reserves needed for adequate conservation was considered, and the points which you raised for consideration on page 2 of your letter are certainly very valid."

d) Conservation:

It is hard to assess the situation. The subject is so complex that Malesia shows up like a mosaic, and a changing one at that. Besides, there are most painful differences between saying and doing. To begin with the last, let me quote from Dr. Willem Meijer's 'Reflection from a short visit to Lampung Province, Sumatra' (BIOTROP/TF/74/110), made in July 1973, published in 1974. He sketches the devastations of richly forested tracts in the transmigration areas, used to absorb the population growth of Java. On 14 July he visited the Wai Kambas Nature Reserve. "At one place the forest was newly cut and burnt. This marked by sign board, telling we were entering a nature reserve. Tree cutting and hunting forbidden, at orders of the Head of the Indonesian Forest Service. The Tridaya Company have now logged the area. All the way to timber camp D (another 20 km or so) we saw signs of cut and burn. Measured log 17, 17.1, 16.4, 17.5 inch diameter, within a few minutes' walk; they are all supposed to be 20 inch (50 cm) or over. According to the forester in charge, the small logs are discarded for export, will only be used for local sawmilling. What difference that makes for forest regeneration, he did not tell. Before night we visited a nearby area. Tractor trails everywhere through the jungle. Great part of residual stand burnt. ... Met at afternoon with Forest Nature Conservation Officers Aripin, Nasution, and Saanoto. Aripin who earns Rp. 7,000 a month (i.e. US$ 17) with a family of 7 children told me that 10 years ago Wai Kambas was still a beautiful forest, now completely devastated. I estimate that it will take 60-70 years to regenerate." (pages 7-8).

"About 20,000 hectares of the hydrological reserves above Teluk Semangka and above the próposed irrigation dam of Wai Seputih are underway to be logged by the Tanjung Jati Company. I got conflicting reports on the desirability of these logging projects from the point of view of landuse. A forest-

er told me that the Agriculture Department had nothing against these projects and an agricultural officer was shocked to see these projects on a map. Who is telling the truth? What is meant by selective logging and sustained yield? In the publications of the Indonesian foresters it means logging of commercial trees at sizes above 60 cm diameter. In the agreements with timber companies it becomes 50 cm diameter and in case the companies want to take sizes smaller than 50 or 40 cm diameter it seems that there is nobody who does anything about that.

Are the foresters in Indonesia in fact just selling out their timber resources as far as possible and are all the laws and master plans nothing more than window dressing?

After having seen through the façade there is such a credibility gap created in my mind that I would advise every forestry consultant not to trust any official Indonesian forest classification any more.

Let's face it. Professional forestry in Indonesia which must safeguard sustained yield, hydrological reserves and nature conservation which assists the country in a proper exploration and wise use of its natural resources is in a shambles. The only action the Government has taken recently is to forbid the Forest Department to hire more graduates" (pages 4-6).

Meijer goes on to describe how on 18 July at the university of Tanjung Karang a seminar was held on Forestry and Land-use, where the many problems were heartily discussed among an audience of c. 300. "New spirit of openness and frank discussions of problems which I met in Indonesia at our Bogor symposium as well as in Lampung is a good sign of the awareness of the needs for action for improvements and further progress towards greater welfare and better quality of life in Indonesia."

Anyone who is interested in seeing the conservation problem from within should read this account. More stylized, and well provided with references is another paper by W. Meijer, Devastation and regeneration of lowland dipterocarp forests in Southeast Asia, BioScience 23(9), Sept. 1973, 528-533.

Cibodas is another case in point. After the outcry in the previous issue, I received a number of letters, for which I feel very grateful. From them, I have selected one, written by a botanist whose wisdom and judgement I have reason to respect.

June 14, 1974.

The Editor, Flora Malesiana Bulletin,
Rijksherbarium, Schelpenkade 6, Leiden.

In reply to your request for written support in order to save Cibodas, I wish to inform you that during my visit in

1972 I found the same facts at Cibodas as those described in Flora Malesiana Bulletin 27, 1974, p. 2183-4.

At that time I visited 4 nature reserves in West Java. They were all subject to various forms of damaging activities, mostly poaching and lumbering.

Cibodas is now under jurisdiction of the Indonesian Forestry Service. That Service is interested only in selling the Indonesian forests as quickly as possible, including the reserves. Any protective measures the Service may take, will only be intended to safeguard the forest until it, in its turn, can be sold.

Money supplied for the protection of Cibodas will disappear in the pockets of the lower Forestry Service officials. The big money goes to the big chiefs, and partly to the State.

The only means of saving Cibodas (and the other reserves for that matter) is placing them under the jurisdiction of LIPI-Kebun Raya Indonesia. Money going to these latter will be spent in the right way and serve the purpose. Of course the Forestry Service will oppose the transfer of the reserves to LIPI-Kebun Raya.

Yours sincerely,

Doorwerthse Straat 10, Heelsum. (prof. dr. H.C.D. de Wit)

Sometimes I think: will I not spoil the good cause with the Indonesians by publishing a letter like this? Will they not get angry and order all forest to be cut down just to be rid of all the embarrassment for the moment? Such sentiments were quite strong shortly after the war. But on the other hand there is an amount of genius amongst the Indonesians. In dealing with them, there is a wide fringe of politeness and circumspicion. Beyond this, there is a feeling for truth and a deep interest in it. Professor De Wit writes a letter in sincerity, so I print it. The Cibodas reserve is a test case. If this fails, it all will fail. We must know each other's commitment. The sell-out of the rain forests is the scandal of the century. Here is a nation that allows its environment to be destroyed, forever, in twenty years time. If the population itself is too stupid, or too lazy, or too poor, or too greedy for money, to see what is going on, others must speak up, and continue to speak up, from pessimism and optimism at the same time. Suddenly, the genius may wake up. For as I see it, Indonesia differs from the western world in that it is not ideas that count there, but facts.

The World Wildlife Fund has decided on a worldwide action to see what tropical rain forest can be saved. The WWF Netherlands National Appeal has agreed to collect funds espe-

cially for the tropical rain forests in Indonesia and Suriname, in September 1975 with a continuation in 1976.

On 7 February a meeting was held at Utrecht, chaired by Dr. J. H. W e s t e r m a n n, to discuss suggestions for fund-raising and projects. The aim is Dfl. 1 million, i.e. US$ 400,000. Before long, Dr. Westermann hopes to visit Indonesia for a further discussion of the suggestions made.

If we see what has been achieved in the Gunung Leuser Reserves (pages 2185-2186), notwithstanding all kinds of problems, with funds collected at a previous national action in the Netherlands, and if more projects can be developed along similar lines, the money will be well-spent. Another reason for hope is the interest on the side of Indonesia, where a growing number of persons take up a training in conservation matters, and the idea of conservation is also gaining ground with the public.

Late in 1974, Mr. John B l o w e r, FAO expert in conservation, arrived in Indonesia to serve as a consultant. Two assistants have been attracted, one of them Mr. A. v a n d e r Z o n, who recently graduated as a biologist at Leiden; they are expected on duty mid-1975.

According to the new Five Years Programme 1974-1979, only 9 conservation projects in Indonesia will receive funds from the government. They are (with millions of Rp. annually between brackets): Babirusa in N. Celebes (10); Java Tiger in Meru Betiri, and deer breeding project in E. Java for hunting tourism (23); Varanus komodoensis in Komodo near Flores (20); dwarf buffalo in Central Celebes (10); Ujung Kulon in SW. Java (10); dwarf gibbon in Siberut off W. Sumatra (10); Banteng breeding and Jalak Putih, in Bali (5); Sumatra Tiger in Lampung prov. (10); Orang Utan in Kutai, E. Borneo (10); altogether 120 million rupiahs, including 12 mln. for the Bogor Office; this equals about US$ 300,000. PPA personnel in other reserves will receive their salary, but no funds for running expenses. It is a bit ironical to realize that the Nature Protection Service (Dinas PPA) comes under the same forestry service that rakes in millions of dollars in profit from the timber sell-out, at present collecting more revenues than ever. The PPA has 22 sections in Indonesia, each headed by a 'kepala seksi'. A list of reserves by 1 July 1973 has 148 items, together 2,814,625 hectares in area. A tapir nature park of 23,800 hectares near Dolok Surungan in N. Sumatra, was declared on 2 February 1974.

Recent meetings held are the Regional Meeting on Ecological Principles for Development in Tropical Forest Areas in

SE. Asia, at Bandung on 28-31 May 1974, and the Conference on Ecological Guidelines for Forest, Land and Water Resources Development in Indonesia, at Bandung on 3-5 June 1974. A key role in the organization of these conferences was played by Dr. O. S o e m a r w o t o, professor of Biomanagement at Bandung University, who is also active in training students in conservation.

At the 2nd Inter-Congress Meeting of the Pacific Science Association at Guam, 20-25 May 1973, Kuswata K a r t a w i n a t a (Herbarium Bogoriense) produced a paper Geographic and Climatic Analysis of the Nature Reserve System in Indonesia. It brings the news that in April of that year three new reserves have been declared in western New Guinea, namely:

Kelapan-Komaran Islands (Frederik-Hendrik I.), ± 2500 sq.km
Cycloop Mts., ± 470 sq.km
Waimena area, ± 10,000 sq.km.

He writes that by December 1972, together with these new sites, the number of reserves is 206, with a total of 38,673 sq.km. But heavy damage has been inflicted by logging and poaching. "The Ujung Kulon nature reserve in West Java is perhaps the only well-maintained reserve. It receives financial support from the World Wildlife Fund for its maintenance and research." While we may add that the Gunung Leuser Reserve is not doing too badly, either, it must be said that the whole picture is somber. On the other hand, if we realize how much has been accomplished during the last 5 years, and how an increasing number of people are joining efforts for the good cause, then there is all reason to go on hopefully. A typical case is

The Kutei Reserve, Borneo. In 1970 a survey was made there, by Soegeng, Anderson, and Phung, to assess its potential as a research site for tropical forest ecology. The reserve dates from 1936; its original size was ± 3060 sq.km. Orang utans occur in quantity, and even the two-horned rhino is probably still present in some numbers. The area is under lowland rain forest, with much Eusideroxylon zwageri. The survey team worked for three weeks and brought back a lot of data, from which a Preliminary Report was compiled for BIOTROP, but this was left on the shelves until Dr. Kuswata K a r t a w i n a t a brought it out in mimeographed, but very useful form, and accompanied by a detailed 1 : 100,000 map, in 1974. The title is W. Soegeng Reksodihardjo e.a., Preliminary Report on Investigation of the Kutei Nature Reserve, East Kalimantan, Indonesia, 33 pp. (BIOTROP/TF/74/117. It can be obtained from BIOTROP, P.O.Box 17, Bogor.

The report is really good and informative, concisely dealing with all the main aspects. Only, in recent times one-

third of the area has been taken away from the reserve for logging, so but 2000 sq.km have been left, still a tract of 40 by 50 km N of Samarinda. And exploitation is going on. Why does not the Indonesian government exert the power to revoke a concession? There is really no time to lose. Fortunately, as we saw in the foregoing story, this reserve has remained on the payroll.

The following text was issued by the World Wildlife Fund, in letter PJ/mr-XI/8 on 7 November in Morges, Switzerland, addressed to Public Agencies and Private Enterprises exploiting Mineral, Oil, and Timber resources.

Alarmed at the rapid increase in the rate of exploitation of the world's limited natural resources, often without considering future needs or taking into account adverse environmental impacts;

Regretting the lack of concern for the natural environment demonstrated by many bodies both public and private engaged in such exploitation, and the thoughtless destruction wreaked by their field personnel;

Stressing the special responsibility of all groups engaged in such exploitation, particularly those profiting commercially from such ventures:

The Board of Trustees of the World Wildlife Fund meeting in Lausanne, Switzerland, on 1 November 1974:

1. Calls on all public agencies and private enterprises engaged in the exploitation of natural resources, particularly those extracting minerals, oil and timber, to be aware of their special responsibility for the rational use of these resources in the best long-term interests of all peoples;
2. Urges such agencies and enterprises to adhere to sound ecological principles in all their activities from the planning stage through to execution, and to follow ecological guidelines as formulated by the International Union for Conservation of Nature and Natural Resources (IUCN);
3. Appeals to such agencies and enterprises (a) to initiate investigations by competent experts into the environmental impact of their activities, (b) to adopt monitoring and corrective measures required by the circumstances, and (c) to avoid development and other activities which are incompatible with the long-term wise use of natural resources; and
4. Stresses that such agencies and enterprises should ensure that their field personnel observe local conservation regulations, including those concerned with hunting, and refrain from killing or collecting endangered species of animals and plants.

It seems a good idea to ask all the readers of this Bulletin, to make the contents of this resolution known in appropriate places, to enter a dialogue on how it can be made effective, and to keep the dialogue going.

From the Philippines, we get the incredible news that Mt. Apo National Park, which tops the United Nations List of National Parks of 1971, is going to be logged. The Bureau on Forest Conservation* has recommended to the President the reduction of the Park from 73,000 to 13,790 hectares. Twenty-four thousand hectares will be converted into a 'national forest park' and the rest, i.e. 35,000 hectares are sacrificed to the loggers. The news comes from 'Bulletin Today' (Manila) 30 April and 12 May 1974, which adds: "This is forest conservation in reverse, in direct contravention of all decrees and pronouncements of the new society. It is also a reversal of our policy on national forests."

From the same source, of 19 January 1974, I copy the following lines: "The government opened the door yesterday to the full-scale exploitation of timberlands in the mineral (nickel) reservation of Surigao.

Affected by the government action are valuable upland and mangrove forests covering 224,900 hectares. A series of orders, proclamations and decrees dating back from 1970 has made this possible. The final order is Presidential Decree no. 377 dated Jan. 14, 1974, which adds parcel No. 1 of the reservation, with an area of 64,200 hectares, to the public domain available to timber concessionaires."

Surigao is on the northern point of Mindanao. Meanwhile, I heard that by 1 January 1975 export of logs from the Philippines is no longer allowed, in order to stimulate the local timber industries. It remains to be seen what difference this will make to the virgin forests in the National Parks. The disasters that are in the making for the Philippines as a result of mismanagement and of the corruption behind it have been so ably and convincingly described by E. Quisumbing, Philippine Species of Plants Facing Extinction, Araneta J. Agric. 14 (1967) 135-162, that not a word need here be added.

* And then to think that the Office of Wildlife and National Parks, formerly independent, has recently been reduced in status and placed under this very same Department!

Sabah, a good example of management? During 1969-72, a forest inventory was undertaken by Forestal International of Canada, 1550 Alberni Street, Vancouver 5, British Columbia, which resulted in a report accompanied by excellent and detailed maps of the timber stands. Thanks to these efforts,

the whole country is now covered by applications and licences to remove the timber. Licences have even been issued over forest reserves that were specifically constituted for protection and as scientific virgin jungle reserves. It is estimated that by 1984 there will be no timber to work any more, except for the Sabah Foundation. This is state-owned timber land covering some 3,000 sq.mi., i.e. ± 10% of the total land area, mainly on the East coast and including the unworked forests remaining in all concessions which are not extended when they expire, in most cases about 4 years hence. The Sabah Foundation, therefore, is the permanent forest estate for timber production.

The intention is apparently to exploit the forest for the maximum short-term financial benefits. The Sabah Foundation will supply the future domestic needs and a surplus for export; the latter, however, will be insignificant in comparison with current figures. It is envisaged, too, that part of the 'permanent forest estate' will be given over to short rotation plantations for the production of wood chips.

Again, some 150,000 acres in the Kalabakan Forest Reserve (east Coast) worked for timber and partly covered by regeneration operations, are likely to have the residual species felled for wood chips before being converted to rotation plantations for the same end use. In this case, it appears from an official release published in the local press that some 450 million dollars may be jointly invested by the Government and one of the large timber companies, but no feasibility study has been carried out by the Department; even the choice of species, Albizia falcata and Pinus caribaea seems questionable.

Formerly the policy on alienation of forested land was that licences were issued only in conjunction with firm proposals for agricultural development. The revenue realised from the exploitation of the natural asset was re-invested for the benefit of the country and its people. This was, of course, indirect in the case of large scale commercial development, but where development was on a co-operative basis the timber revenue was re-invested directly in the agricultural project to benefit the actual participators. This policy appears to have been abandoned, and future agricultural development may be slowed down because there is no timber on the land to offset establishment costs.

The report from which these passages were taken, was made by a most competent authority. I can supply copies on request. What I mean to say in quoting this, is that Sabah may not be such a fortunate example of good forest and parks management as Meijer suggested on pages 138-150 of Coordinated Study of Lowland Forests of Indonesia (edited by Kartawinata & Atmawidjaja).

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Blueprint for Conservation in Peninsular Malaysia was published in Malay. Nat. J. 27 (1974) 1-16. It sets forth principles of conservation and identifies and briefly describes the areas worthy of conservation.

The Forest Research Institute at Kepong is studying the effects of logging in catchment areas in order to minimise soil erosion and water pollution. A Peace Corps Volunteer, Mr. Bob G r a v e s has been assigned to this project.

The Forest Department of Malaya has completed a preliminary report on the status of Virgin Jungle Reserves, now 66 in number. These reserves are small pockets of about 80 hectares within forest reserves to be kept in virgin condition. The rest of the reserves are managed for timber extraction. The Virgin Jungle Reserves are to serve as control areas for regeneration in the logged over parts. They should also serve as sources of seeds and refuges for plants and small animals. Big animals are conserved under a separate programme by the Game Department. Mr. Jack P u t z, Peace Corps Volunteer, will make detailed surveys of the existing Virgin Jungle Reserves, and draw up proposals for new ones, in order to establish a network covering all forest types in the Peninsula.

Comment by the editor: While the idea is excellent in itself, the proposed size of the reserves may be too small. Eighty hectares is just the area of the Bogor Botanic garden. The species density in primary forest may be very low. Ashton (in Lowe-McConnell, Speciation in tropical environments, pp. 162-164 (1969) has mapped an area of 2.88 hectares (= 7 acres), in which occurred 2 Alstonia angustifolia, 1 Madhuca lancifolia, and of Parartocarpus venenosus 1 of both subspecies, all trees thicker than 20 cm. It seems doubtful if a population of some 30 trees of a species (which may be dioecious at that) is enough to maintain itself indefinitely. I think the park size of at least 400 hectares recommended by Dr. J.A.R. Anderson will serve the purpose far better.

It may be useful to enumerate the functions of the virgin forest:

1) Protection of soil
2) Water catchment
3) Stabilization of climate
4) Production of timber

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5) Supply of minor forest products
6) Food and shelter for animals
7) Source of new economic plant species
8) Gene pool for plants in cultivation
9) Matrix of evolution
10) Source of knowledge
11) Recreation
12) Education and instruction

The line marks an important difference. If a virgin forest is logged over, or becomes subject to silvicultural operations like poison girdling, cutting away the climbers, selective planting or sowing, treatment with fertilizer, or other measures to promote regeneration of commercial species, it goes on to function as a forest, but only on the points 1 to 4. It should be realized that all tropical forestry concerning the mixed forests aims at changing their composition. This means, however, that through silvicultural measures, the functioning of the forests on all the other points will suffer.

It is therefore misleading not to make a sharp distinction between inviolate nature reserves (the 'non-use forests' in the above letter of Professor Kalkman) on the one hand, and all forests subjected to whatever operations at the hands of foresters on the other. From this it follows that boundary marking should be very clear, as a first condition of all efforts to establish virgin jungle reserves. Without boundary marking, all such efforts will miss the point.

Now the larger a reserve is, the shorter is its boundary, in proportion. A square area of 80 hectares has a perimeter of 3.6 km; a square area of 400 hectares of 8 km; one of 800 hectares of 11 km. So for three times the boundary length you get ten times the area. Isn't this a matter of economy to consider?

In view of the precarious situation of the Malesian environment, the Malayan Nature Society should be strengthened. This is at the moment by far the most important nucleus of knowledge and initiative in the field of conservation in the region. The Malayan Nature Journal, a quarterly which all members receive, gives a broad range of high quality contributions, well-illustrated, and with ample attention to conservation, also in adjacent countries. Membership costs 15 Mal.$ a year; schools and institutions may join on the same terms. Student membership is open to all persons attending a full-time course of education at a recognized institute, at Mal.$ 10. The address is P.O.Box 750, Kuala Lumpur.

The Society has at present a Selangor, a Singapore, a Penang, and a Perak Branch. I wonder if it would be possible to establish an Indonesian Branch, a Philippine Branch, thus taking advantage of available means and organisation, and to have a fine periodical forthwith.

Conservation in Papua New Guinea: corrections kindly supplied by Mr. N. C. G a r e as announced on page 2189.

(a) There has recently been tabled in the House of Assembly a Report of the Commission of Inquiry on Land Matters, which amongst other things recommends the declaration of "National Land". This category could be used by the Government to set aside permanent Forest Reserves, National Parks and Nature Reserves.

(b) Varirata National Park, near Port Moresby was officially opened on 18 October 1973. I believe it will prove to be a successful demonstration of the involvement and conservation interest of customary landrights holders in a National Park.

(c) The new Minister for Lands and Environment, Mr. Thomas K a v a l i, is exhibiting a deep interest in National Parks and wildlife conservation matters, and has already moved to improve Government assistance to both the National Parks Board and the Baiyer River Sanctuary Trust. I believe both organisations will receive added financial support in 1974/75, and that Mr. Graeme George, Superintendent at Baiyer River, will be retained beyond September 1974.

(d) I have now returned to Australia, and am employed as Executive Officer for the proposed National Parks and Wildlife Commission to be set up by the Department of Environment and Conservation, P.O.Box 1937, Canberra City, A.C.T. 2601. One of our functions is to assist nearby developing countries, and we are currently recruiting a graduate experienced in national parks works to take over my former position with the National Parks Board until the end of 1975. We will continue to support the Board and the Papua New Guinea Government wherever we can in the nature conservation field.

May I suggest that you direct further inquiries to Mr. Roger D i x o n, Private Secretary to the Minister for Lands and Environment, Department of Lands, Surveys and Mines, Kovedoku, Papua New Guinea.

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STOP PRESS — Conservation of Endangered Species on Christmas Island, 45 pp., 2 fig., 5 phot., a report issued by the Australian Government Publishing Service, Canberra (Oct. 1974), contains an exemplary overall conservation plan (emphasis on birds).