VI. MISCELLANEOUS INFORMATION

(continued from page 2017)

a) Research and Publications:

The limestone flora of Malaya. Under this title, Mr. S. C. C h i n submitted a M.Sc. thesis in typescript in March 1973 at the University of Malaya, Kuala Lumpur. Supervisor was Dr. B. C. S t o n e.

Hitherto, Henderson's work of 1939 was the only study on the subject, with 745 spp. in all, about 195 of them known only from limestone, 130 of them endemics. Since exploration started in 1880, sixty collectors (listed) have gathered 2650 numbers, of which Chin examined 2250, and to which he added 1550. The total limestone area in Malaya is 260 sq.km, the average height ± 245 m. In the present study, 1195 spp. are recorded altogether, 1098 of them flowering plants, and the main body of the work is an annotated list of these species. The limestone is floristically very rich in comparison with other vegetation types in Malaya. Comparatively, however, it is badly known, each species being now represented by 3-4 specimens on average. The number of proven endemics bound to limestone is now even smaller than in Henderson's time.

There are probably over 200 limestone hills in Malaya, plus a considerable part of the Langkawi Islands. The number of explored hills is about 50, of islands 25; the author visited half of them. The Malayan limestone is quite pure; its age is Ordovician to Permian. The older hills carry more soil and support a taller vegetation, but it is not only the younger hills that are steep. Recently, limestone outcrops have been discovered as far South as Johore.

The thesis deals with vascular plants, terrestrial as well as epiphytic (some mosses have been mentioned) from the limestone and soils directly derived from it; great care was spent in excluding plants on alien soils. Many labels were found to be inadequate in identifying the soil. It was found that Anderson's classification of 1965 into 8 groups of vegetation does not completely hold in Malaya; the author proposed a tentative classification of 9 groups, relating to the topography. Floristically, the seasonally dry limestone of northern Malaya differs from that further South.

As Henderson already said, the rich limestone flora of Malaya differs from the rest of the flora in degree but not in kind. But two families are confined to limestone, Buxaceae with 3 spp., and Primulaceae with 1 sp., and in general the richness of representation of a family on the limestone

reflects its richness in Malaya as a whole. A list of 72 families has been given which do not occur on limestone; they contain aquatics, parasites, coastal plants, weeds and cultivated plants, families monotypic in Malaya, and families small and uncommon. Plants otherwise occurring between 800 and 2000 m may on limestone descend to 300 m and lower. The flora is subdivided into 5 elements: exclusives (20.75% of the vascular flora), preferents (6.79%), indifferents (34.47%), strangers (also 34.47%), weeds and escapes (3.26 %). The annotated list of taxa gives the name, main references, brief description, distribution outside Malaya, and citation of numbers seen. Keys are given under each family.

Although admittedly a good deal of exploration remains to be done and the author only examined material in Singapore, Kuala Lumpur, and Kepong, it is evident that Mr. Chin has considerably advanced the existing knowledge of the subject. The overall accuracy of his work seems quite good. It would be a great pity not to publish his thesis in its entirety, with extended description (amplified with some photographs) of the various vegetation types, an enumeration of limestone hills with data of accessibility and a good map. Studies on micro-climate will probably reveal fascinating things. With Dr. Anderson's results forthcoming in a year of two, this would make a fine contribution, worth of congratulation to both Dr. Stone and Mr. Chin.

University of Malaya, Kuala Lumpur. In addition to the above news, Mr. Eddie T e o h obtained his M.Sc. with a thesis on cytological and chromosome studies of some members of the Orchids, the Phaius tribe; and another M.Sc. was awarded to Miss Y i p M o h Y i n g for her cytological study of Aranda (Arachnis x Vanda hybrids) in Malaya.

Two Malaysians have taken up graduate studies under the Aberdeen—Malaya joint scheme for research conceived by Dr. Peter S. A s h t o n. Mr. S. K. Y a p is in Aberdeen, while Miss Y a p (no kin) is working here in the laboratory of Dr. D. W. L e e.

Several former University of Malaya students in botany have attained their doctorate abroad this year and have returned. Dr. Y. K. K a m (plant anatomy and morphogenesis) comes back from the University of British Columbia to work at the Science University of Penang. Also joining Penang is Dr. Y. K. L e o n g (numerical taxonomy) from Western Ontario under J. B. P h i p p s. Returned lately from Cambridge with her doctorate in genetics is Dr. C. H. C h e a h to work at the Agriculture University Serdang. Dr. Cheah's work on Pandanus chromosomes appears this year in the Botanische Jahrbücher. Dr. V i j a y a has returned from

Queens' University, Belfast, with her Ph.D. in mycology. Dr. P a r a n j o t h y who returned earlier from Wales with a doctorate in plant physiology is now working on tissue culture methods for Hevea in the Rubber Research Institute, Kuala Lumpur. Mrs. Ruth K i e w (née E v a n s) who spent a year in Malaya on palm ecology, particularly of Iguanura, is now married to a Malaysian zoologist and is teaching at the Agriculture University, Serdang, after further studies at Cambridge.

An exceptionally large group of Honours Students enrolled for the 1973-74 Botany courses (21 in all). Several have chosen to work on projects which are of possible interest to readers of the Flora Malesiana Bulletin. One student is attempting to obtain materials for a cytotaxonomic study of Forrestia and some other local genera of Commelinaceae. Two other students are working with Dr. S t o n e on anatomy of Pandanaceae.

Two students under the direction of Dr. D. W. L e e are doing comparative studies on seed proteins of Malayan plants One is conducting an analysis of phytohaemagglutinins in several local species of Leguminosae, and another is undertaking a serological investigation in Flagellaria, Joinvillea, and Hanguana, to assess the recent breaking up of the old 'Flagellariaceae' sensu lato.

Manual of non-dipterocarp trees of Sarawak. Volume I is ready for publication, under authorship of Dr. P. S. A s h t o n of Aberdeen. Twenty-five families will be included in this volume.

Tree Flora of Malaya. Volume 1 was published in January 1972 and volume 2 in 1973 (see Reviews). The third volume (out of four) is in preparation, containing Aquifoliaceae by Ruth Kiew, Araliaceae by B.C. Stone, Ebenaceae by F.S.P. Ng, Icacinaceae and Myrtaceae by K.M. Kochummen, Ochnaceae by F.S.P. Ng. Several families have been promised by Dr. E. Soepadmo and Dr. Hsuan Keng. Dr. R.D. Hoogland, while visiting Kepong in May 1973, offered to write up the Malayan Saurauia's while working on his Flora Malesiana revision.

The Editor, Dr. F. S. P. N g, Forest Research Institute, Kepong, Selangor, Malaysia, would be pleased to hear from any other specialists who, while proceeding on a work of larger scope, would like to contribute to this Flora by writing up the Malayan species.

Bogor: Economic Plants. As part of their 5-year plan, the Lembaga Biologi Nasional intends to concentrate their efforts on potentially economic plants. Contacts have been made with Professor H. C. D. d e W i t at Wageningen,

Netherlands, in connection with plans to bring out a revised edition of K. Heyne's book on useful plants, and to develop genetic resources. Mrs. Dr. S e t i j a t i Sastrapradja is engaged on cytogenetical studies of Phaseolus, Dolichos, and other useful legume genera. Mr. Nazar N u r is engaged on flower biological research (pollination and fruit setting) in Musa and especially also Parkia, consisting of field observations as well as of experiments. Other staff members are joining the effort.

Quaternary Vegetational History in SE. Asia. The Department of Geography, University of Hull, England, has taken up an interest in this subject. Messrs. J. R. F l e n l e y and R. J. M o r l e y concentrated their efforts on Sumatra, sampling cores from lake bottoms to study the microfossils. They worked in the field for several months during 1972, during which they claim to have found Isoetes for the first time in Sumatra, notably in the Kerintji Valley.

Pollen examinations of Oryza, Themeda, and other grasses are carried out by Mr. Bernard K. M a l o n e y, to determine the influence of man in the island, and the time and manner of introduction of agriculture. Radiocarbon datings are used. He has in mind to go to the Lake Toba area for the last 3 months of 1973, and would be interested to get in touch with others who have a local knowledge and could advise him about other possibly promising sites.

Elmer's field notes of his Plantae Elmerianae. We learned from Prof. R. McVaugh that among the Reliquiae Bartlettianae at Michigan there is a complete set of some 10,000 handwritten, original field notes of Elmer's collections in the Philippines and Borneo. In his Leaflets Elmer based the descriptions of his Philippine Plants mostly on these field notes. Also Merrill, in his Plantae Elmerianae Borneenses, made use of original field notes in newly described species and mentioned concise notes in records of species. It is pleasant to know that in case of need this source is always available at Michigan.

Orchid Photographs. Mr. & Mrs. C h a d i m, 8 Parker Street, Curtin, A.C.T. 2605, Australia, have made some 400 very beautiful botanical photographs of orchids in Papua New Guinea, and some 300 colour slides, covering c. 160 species. The black/white photographs can be obtained at 2 Australian dollars per print (subject to alteration).

Trees of Sabah. As mentioned on page 2011 of this Bulletin, a manual of Trees of Sabah excluding Dipterocarpaceae (Sabah Forest Record No. 10) is in preparation at Sandakan. Volume I containing 23 families, is in the press, and Volume

II should conclude with a further 29 families. The families chosen are all woody and include all trees considered ever likely to have any commercial importance, or which are important in silviculture or which attain a diameter of more than 60 cm. Both volumes are to be profusely illustrated with line drawings and photographs, and field keys are provided throughout where technically possible.

Sepilok Handbook. The comprehensive guide to Sepilok Forest Reserve, the type locality of numerous flowering plants, is expected from the press at this time (Sabah Forest Record No. 9). It contains most of the research data available on the flora, with chapters, on climate, fauna, insects, birds, and history of exploitation.

Prehistoric Wood in Borneo. Mr. Tom H a r r i s o n of the Sarawak Museum at Kuching, reported that he is now completing a monograph on 'Prehistoric wood excavated at Kota Batu, Brunei, and elsewhere in Borneo'. This was scheduled to be published early in 1973, as the second Brunei Museum monograph, and the first serious study of wood work and timbers generally used in the pre-European period, in the early iron and stone ages.

Prizes of the Professor Lam Rijksherbarium Fund. Two prizes were awarded for the best achievement by a student at the Rijksherbarium for an M.Sc. degree. For 1969-70 it was Mr. F. v a n d e r P l a s for his work on the Lemnaceae (published in the Flora Malesiana), and for 1971-72 it was Mr. E. J. M. A r n o l d s for his work on Hygrophorus (Fungi), which will be issued in offset by the Rijksherbarium. On 30 March 1973, the celebration took place with speeches and well-deserved applause of all the personnel.

Stichting ter Bevordering van de Malesische Botanie is the official name of a foundation to promote taxonomic work on Malesian plants, which was established on 28 May 1971. This occurred on the occasion of a fund set up by Dr. B.A. Krukoff to get such work done by well-qualified taxonomists. Chairman of the board is the Director of the Rijksherbarium, members are the Editor of the Flora Malesiana, three other botanists of the Rijksherbarium staff, and a treasurer. So far, manuscripts have been completed on Caesalpinia by Mr. T.A. Hattink and on Leea by Dr. C.E. Ridsdale; others are in preparation. It is very gratifying that the work done at the Rijksherbarium has attracted such valuable attention. The foundation will continue to operate in the foreseeable future. Other contributions will, of course, be highly appreciated.

Fossils from the bottom of the Indian Ocean. Fascinating news reached us through Miss Elisabeth Kemp on results obtained by the American Deep Sea Drilling Program, which is working in the Indian and Antarctic Oceans. A bore-hole was drilled towards the southern end of the Ninety East Ridge which runs straight south from the Gulf of Bengal over some 50 degrees of latitude. The bore-hole was made at approx. 90° E and 29° S, at some 1200 metres depth. This yielded a microflora suggesting a shallow-marine sequence, with abundant leaf and vascular tissue, as well as spores and pollen of a tentatively suggested Lower Miocene age (based on a poor representation of Foraminiferae) comprising some 25 Angiosperms, 10 fern types and one Podocarp. The emerging geological picture of this part of the Indian Ocean suggests a former string of islands may have been present along the Ninety East Ridge at varying times from the Palaeocene to the Miocene. — v.St.

Seedlings of Malesian Trees, Bogor. Some years ago the organisation for cooperation between Netherlands and Third World Universities (NUFFIC) agreed to finance a plan worked out between the Rijksherbarium and the Lembaga Biologi Nasional, of which Professor O. Soemarwoto then was director. Seeds with voucher specimens were to be collected from trees, to be grown, drawn and described in the Bogor Gardens and the seedlings finally planted there to enrich the stock. The data on seedlings are useful to foresters who have to deal with regeneration, and to taxonomists who often find characters in them (see page 1416-1421). After several months of preparation, Mr. E. F. d e V o g e l, employed as 'executive botanist' for this project, went to Bogor in September 1971.

He set out to collect seeds on various trips in Java, Sumatra, Borneo, and Celebes, and established a nursey in a remote shady corner of the Garden. He was fortunate in enlisting the service of Mr. Moehamad T o h a, one of the two draftsmen who had made the superb colour plates for 'The Mountain Flora of Java', to make drawings of each species in ink and sometimes in watercolour. Thus under his hands a book is growing that can in many respects be compared with the Seedlings book by Dr. D. Burger (reviewed in this same issue), but with, of course, different genera, seedlings described in more stages, and an extensive introduction to the subject. He has already studied ± 300 species, and discovered the most surprising manners of germination.

De Vogel also spends considerable time on instruction, and also cultivates his interest in orchids. When about Sep-

tember 1974 the outdoor work must stop, it is expected that by then the seedlings of the majority of Indonesian lowland tree genera will be known. There are also plans to compile a bibliography of seedling publications on Malesia, accompanied by an index of species of which seedlings have been studied.

Dr. Egbert H. W a l k e r, Smithsonian Institution, Washington, D.C., has delivered a large MS. of the Flora of Okinawa and the southern Ryu Kyu Islands to the Smithsonian Press, February 1973. Besides, he is planning to resume work on Myrsinaceae, mainly of Thailand. For this purpose he paid visits to Edinburgh, Kew, Leiden, and Aarhus in April 1973.

History of Science and Scientists in Papua and New Guinea. The Department of History of Science and Technology, of the University of Papua New Guinea is undertaking an encyclopaedic work under this title. An undergraduate student/research assistant of the Department of Biology, Mr. John Saunana, is writing up the data on botanists, particularly those after 1956.

This cyclopaedia will of course not be along the elaborate line of Wichmann's and Le Roux's works, but more in the style of 'Science and Scientists in the Netherlands Indies'. — D.G. Frodin.

Vegetation of New Guinea. Mr. K. P a ij m a n s of the CSIRO, Canberra, is far advanced in the compilation of a vegetation map with accompanying text of eastern New Guinea, or perhaps the whole island. Dr. M. M. J. v a n B a l - g o o y of the Rijksherbarium will contribute a chapter on the plant geography. The work will be finished in 1975.

Gazetteer of Papua New Guinea is the name of a computer print-out of all the geographical names in eastern New Guinea and adjacent islands, with latitude and longitude. It is due to be available in February 1974 with The Surveyor General, Department of Land Surveys and Mines, P.O. Box 2165, Konedobu, Papua New Guinea, for about 4-5 Australian dollars.

History New Zealand flora. Mr. D. C. Milden H a l l, palynologist of the D.S.I.R. New Zealand Geological Survey, communicated (in litt.) that in North Island fossil pollen grains of Acacia have now been found in several localities, in such numbers as to suggest that it occurred in some density during parts of the Late Pliocene and Early Pleistocene. It is also suspected that Eucalyptus once grew in New Zealand during the same period, but with pollen grains of this size (up to 20 microns) long distance transport by

wind cannot be ruled out altogether. Biogeography had always the problem of explaining why these (now) common Australian genera did not occur in New Zealand or why they became extinct in New Zealand. — v.St.

b) Herbaria, Gardens, Organizations:

West Sumatra; Universitas Andalas. Dr. W. M e ij e r of Lexington, Kentucky, visited this University July 28-31, 1973, on his way from Jakarta to Kuala Lumpur. He found out that the Agricultural Faculty started 30 Nov. 1954 in Pajakumbuh, where he established between 1955-1958 a local herbarium, has moved to Padang in 1961 after the civil war (1958-1961). The Department of Biology is using the same facilities of buildings and library. Two of Dr. Meijer's former assistants, Ir. Sjofjan Asnawi and Ir. Ismael Nur Datuk R. Imbang, are now lecturers, teaching Plant Taxonomy, Soil Science and Agrarian Economy. The faculty has a good curriculum with all the basic sciences and covering all aspects of Botany (Plant Anatomy, Morphology, Physiology, Taxonomy of Vascular Plants, Taxonomy of Lower Plants, Plant Geography). The Bulletin of the Faculty started by Dr. Meijer is still being continued (7 issues until 1972). By June 1971, 103 students had finished their studies of this faculty with the Ingenieurs Exam. Of these 74 remained in West Sumatra and 25 went to other parts of Indonesia, 34 are now teachers at the University, and 30 work in the extension service of the Agricultural Department. The tradition set in the years 1955-1960 to specialize in agricultural surveys and socio-economic studies has been continued and the recent publication of Ir. Datuk Ismael on an agricultural economic survey of the Batang Tingar transmigration project bears witness of the capability of the faculty in this field. The botanical training given to students here has the good result that they are well familiar with a wide variety of cultivated plants and common weeds.

Little or no work has been continued, however, in the forests and swamps of West Sumatra. The Herbarium Collections preserved in tins in Pajakumbuh have been moved to Padang. The herbaceous plants like Balsams and Gesneroids have been eaten by insects but the woody specimens have survived and still contain a good amount of well-labelled duplicates ready for distribution. It is hoped that funds can be provided to ship these specimens to the U.S.A. via the USA-AID mission to get them labelled and mounted, and ready for teaching purposes in West Sumatra.

At Pajakumbuh the former houses of lecturers and professors, together with a great part of the Experimental Garden

and the Botanical Lab are still occupied by the army. A new experimental garden has been started East of Pajakumbuh. It is in good shape. Practical training is given here by Ir. Ismael to the senior students. There is also a small library maintained in Pajakumbuh but it urgently needs updating. Apparently nothing published outside Indonesia has been added to it during the last 15 years.

The Pilot Project Village Si-Kabu-Kabu formerly adopted by the faculty has been the scene of long fights during the civil war. Three houses built in old Minangkabau style with wood carvings have been burned down and the experimental garden on Mt. Sago has also been destroyed completely.

The Setia Mulia Garden near Padang formerly under the care of the Bogor Botanical Garden has been devastated by the civil war and subsequent total neglect. The area looks now more burnt over and devastated than in 1954 before the Garden started.

Apparently very few trees were planted in it and practically all the annuals and biennials disappeared. The nearby forests where Dr. Meijer discovered Rafflesia in 1954 seem to be intact and the site of the Garden would still be a good place for a Field station for biological studies in the nearby forests. The touristic sites like Anei canyon and Harau canyon are still much the same. The Government of West Sumatra is trying to develop more tourism. In case this does not mean more and more clearing away of native plants at the tourist sites to replace them with exotic ornamentals, this might be a good thing. It can turn natural areas into economic assets. West Sumatra certainly deserves its own center of Field Biological and Forestry Research. The time seems to be right now for such developments.

The new Sandakan Herbarium being built at Mile 15 Labuk Road, Sandakan, near Sepilok Forest Reserve, is on schedule, and it is hoped to move the collections during the first 4 months of 1974. The floor area will be nearly 3 times the size of the present cramped quarters, with very adequate room for mounting and preparation and storage on the ground floor, immediately below the herbarium. The whole section occupies one wing of a new forest research building.

Sandakan Arboretum. An area of 270 acres has been set aside adjacent to a new Forest Training School, and the Research Centre mentioned above, for an arboretum. A small area is still virgin forest and will of course be kept as such. The remaining area has a few big trees left after logging and some palms and climbers are also being preserved. In between new trees will be planted, from outside seed sources. So far ± 1000 trees have been planted and 20-30 acres cleared.

Amorphophallus titanum flowered in the Bogor Gardens, for the 6th time since 1959. It is plant XI.B.XIX.186, from Sumatra. On 2 November, the spathe opened and spread a carrion smell; next day, it was closed again. From the size records made of this specimen, its growth can be seen:

September 1959	0.84 m high	40 cm girth
January 1962	0.89 m high	55 cm girth
October 1964	1.26 m high	72 cm girth
July 1967	1.42 m high	86 cm girth
October 1970	1.36 m high	110 cm girth
November 1973	1.64 m high	193 cm girth

A smaller plant, XII.B.IX.104, also from Sumatra, flowered on 5 November 1973 for the first time. — From Pewarta LBN I 7.

Melbourne Herbarium. On page 2000 of this Bulletin an inadvertant error was made by the statement that the herbarium moved to a new building. The improvement was that the specimens were accommodated in new, modern cupboards.

Gdansk Herbarium, Poland. This Herbarium in former Danzig where W. W a n g e r i n worked on Cornaceae, is now in the Institute for Biology, Universitas Nicolai Copernici, ul. Sienkiewicza 30/32, Torún, Poland. Abbreviation: TRN.

Centenary Arnold Arboretum. The history of this botanical institute in New England is rooted in Old England. As W.T. Stearn has explained in a detailed and delightful account (Arnoldia 32, 1972, 173-197), the inordinate consumption of wood in England during the 17th and 18th century caused farsighted minds a deep concern about the future, and led to an interest in trees which marks the beginnings of dendrology. This interest was revived in New England following the large-scale destruction of woodland there, to which the merchant James Arnold (1781-1869) owed a good deal of his fortune. He left a quarter of it in the hands of three solicitors, two of whom had a love for and a knowledge of trees. On advice of Asa Gray they decided to use the endowment for an arboretum; this was founded in 1872. They succeeded in connecting it to the City of Boston and to Harvard University; the former administers it as a public park, the latter maintains and controls the collections.

The great Sargent, director of 1873 to 1927, directed the involvement of the institute in eastern Asia which started already before the turn of the century; E.H. Wilson and Joseph Rock are among the best-known explorers sent. Alfred Rehder produced his magnificent Bradley Bibliography; E.D. Merrill, who was director from 1935 to 1946 extended the interest of the institute to the botany of Malesia, to which

it has made contributions of very great and lasting value. We are most happy that this interest is maintained, and offer our cordial congratulations to the present Director, Dr. Richard A. H o w a r d, and his staff, hoping that the series of brilliant achievements may be continued for a long time to come.

Some well-written publications were issued on the occasion. The September 1972 issue of Arnoldia gives, besides the paper by Dr. Stearn, four papers presented at the Centennial Lecture Series; the January/February 1973 issue (112 pages) gives 8 miscellaneous contributions to the Centennial Symposium on 'The potential of Arboreta and Botanical Gardens' — and, we may add, of Herbaria. A 72-page profusely illustrated booklet The Arnold Arboretum: the first century gives flashes of history by S.B. Sutton, who is also the author of Charles Sargent and the Arnold Arboretum, xvii + 382 pp., published at Harvard University Press, 10.00 US dollar.

Rijksherbarium, Leiden. Following a clever initiative of Mr. J. M e n n e m a (in the spirit of E.D. Merrill during the pre-war slump years in the United States), a request was made to the welfare department of the City of Leiden, to have unemployed persons assist in mounting plants, of which a considerable backlog had been accumulating. Thus during the academic year 1971-72 no less than 73,500 specimens were mounted, an all-time record. Three persons are now regularly engaged, each of them mounting about ten thousand species annually. All parties concerned are very grateful.

Dr. P. W. L e e n h o u t s with an assistant spent much time in arranging the Icones, so that in 2-3 years time all of them will be readily available for consultation. Mr. C. L u t, the assistant librarian, has made a beginning to reorganize the personalia-collection. Dr. A. T o u w made a preliminary list of archive material in the institute.

On 31 August 1973 the Rijksherbarium population on the payroll of Leiden University amounted to 61.2 heads. But many more people work here and enjoy the facilities, so the total number of faces regularly seen belonging to names mentioned in the latest Annual Report of the Director is no less than 96, not counting those belonging to young students who come to enjoy the morning coffee, to play bridge in the lunch break, or to take part in the evening games-with-prize which quite frequently are organized by the personnel committee.

In reply to the curious who like to know what things cost a reference can be made to the same Report. There it is stated that the amount of cash to be used during 1973 was

Dfl. 209,500, which is the equivalent of ± US dollar 70,000. This is exclusive of postage, maintenance of the building and, of course, salaries. If all these expenses are included the total annual cost closely approaches Dfl. 3 million, or 1 million US dollar. The output, expressed in published pages, averages 2000 a year of which 1700 can be considered as genuine scientific contributions. Half this number, remarkably enough, does not come from the paid staff, but from guest collaborators. Seven per cent (with fluctuations), is contributed by students. The remainder is produced by the regular staff.

The Gardens and Orchid collection of the University of Papua New Guinea. "Most people in Papua New Guinea thought I was a fixture in Lae (as I did myself), and the first they knew of my appointment was a news item over the air one morning, followed by a newspaper story of the Vice Chancellor's announcement. Although the announcement said that my duties would be concerned mainly with the establishment of a teaching garden for Botany students, most of the publicity referred to my connection with orchids. It was also made public that it was the wish of the University that whatever I achieved would be open to the public." This was in 1969. The words were written by Mrs. A n d r e e M i l l a r, in a pamphlet of the above title. During my visit I had the pleasure to exchange a few words with the energetic lady, between phone calls in her busy office.

Among the eucalypt savanna near Port Moresby, she found the area a horticultural blank. A garden had to be established not only for teaching and research, but also to furnish the grounds of university and staff with suitable plants, and to develop special collections, notably orchids, foliage plants, bromeliads, and palms. Selected was a plot of some 35 hectares, containing a remnant of gallery forest along a creek. By now, hundreds of species have been planted with emphasis on the native flora. Strong efforts are made to propagate these species, to enrich the poor local horticultural spectrum.

Staff is still the main problem. But the garden, which offers a pleasant setting for the scattered new university buildings, looks promising, and the orchid collection, hundreds of species on posts and trunks, is well kept and flourishing. The country is fortunate in now having two botanical gardens of considerable beauty and potential, the 'everwet' one in Lae as well as the 'seasonal' one near Port Moresby, both Mrs. Millar's creation.

Andaman-Nicobar Herbarium. In 1972, the Botanical Survey of India established the Andaman & Nicobar Circle, at Port Blair, South Andaman, with a Herbarium. Botanical work, long neglected since the time of Sulpiz Kurz (1870) and C.E. Parkinson (1923), had already been resumed by Mr. K. T h o t h a t h r i, then at the Madras Herbarium, Coimbatore. He published a brief memoir in Bull. Bot. Surv. India 2 (1960) 341-346, and a more extensive one, ibid. 4 (1962) 281-296, on the islands. All botanists will be most happy to see more work done on these richly forested islands with several proven endemics, and wish the local botanist, Dr. N. P. B a l a k r i s h n a n a copious harvest with, we hope, many duplicates!

c) Symposia, Congresses, Societies, Meetings:

12th International Botanical Congress, Leningrad, will be held from 3 to 10 July 1975. The nomenclature sessions will be held from 30 June to 2 July. It is organized by the Academy of Sciences of the USSR together with the Komarov Botanical Institute. Chairman of the organizing committee is professor Armen L. T a k h t a j a n.

The Congress Programme includes Plenary sessions (Opening and Closing sessions of the Congress, and All-Congress lectures), symposia, contributed-paper sessions, and demonstrations of material. Opportunities will be provided for special-interest group meetings and panel discussions. Speakers specially invited by the Programme Committee will present their papers at the symposia. Applications by Congress members to present other papers will be considered by the Programme Committee; accepted papers will be presented at the relevant contributed-paper sessions. Although each Congress member may be a co-author of several papers, he is only allowed to submit one paper.

The meetings will be divided into the following sections: 1) Nomenclature, 2) Systematic and evolutionary botany, 3) Phycology, 4) Mycology and lichenology, 5) Bryology, 6) Vascular plants, 7) Floristics and phytogeography, 8) Ecological botany, 9) Structural botany, 10) Growth and development, 11) Metabolism and its regulation, 12) Photosynthesis, 13) Mineral nutrition, 14) Water relations and resistance to extreme environmental conditions, 15) Immunity, 16) Cultivated plants and natural plant resources, 17) History of botany and botanical bibliography, 18) Conservation of the plant world. Languages will be English and Russian.

Scientific post-Congress field trips are planned to European Russia, the Ukraine (including the Crimea), the Greater Caucasus and Transcaucasia, Middle Asia, and Siberia. Some

specialized palaeobotanical trips to the Donets Basin (Palaeozoic), Podolia (Silurian–Devonian), Transcaucasia (Pliocene), Middle Asia (Mesozoic) and Siberia (Neogene) are also planned. More detailed information will be sent on request by a Second Circular in the course of 1974. Correspondence to XII International Botanical Congress, 2 Prof. Popov Str. Leningrad 19 70 22, USSR.

8th AETFAT Congress, in Geneva, on 16-21 September 1974. Subjects proposed for discussion: Part I: a) Progress made in the preparation and elaboration of the African floras since the last AETFAT meeting; b) Progress made in the botanical exploration of Africa; c) Progress made in the elaboration and preparation of vegetation maps and of in floristics of Africa during the past period. Part II: 1) The genesis of the African and Madagascar floras and the phenomena of speciation; 2) The contribution from connected disciplines (cytology, palynology, chemistry, numerical taxonomy, etc.); 3) The dispersion of species; 4) The introduction of cultivated and wild plants. Ethnobotany; 5) Pteridophyta; 6) Free papers; 7) Business-meeting.

Secretariat: Conservatoire et Jardin Botanique, 192 Route de Lausanne, CH-1202 Genève, Switzerland.

13th Pacific Science Congress will be held on 18-30 August, on the campus of the University of British Columbia, Vancouver, Canada, 1975. Theme is: "Mankind's future in the Pacific", to be developed through 7 related sub-themes. Among the Contributed Symposia planned are: Pacific Ecosystems; Basic needs in floristic information in the Pacific; Pacific Basin conservation: a basis for the future?; The roots of horticulture — SE. Asia and Malayo-Melanesian Archipelago; Origins of the Pacific Land Biota.

Secretary is Mr. W.S. Hoar, University of British Columbia, Vancouver V6T 1W5, Canada. The airline CPAir has been appointed 'official carrier' for the congress. It has offices in most big cities.

International Symposium on the biology and management of Mangroves. Because of the increasing amount of research on and utilization of mangroves throughout the tropics, a symposium has been organized to bring together the interested people. The Symposium is designed to report on basic aspects of mangrove biology and utilization of mangrove areas by man, and to provide a forum in which conflicts in use of mangroves can be considered.

The Symposium will be held at the East-West Center in Honolulu, Hawaii, on 8-11 October 1974. Program outline: I. Biology: a. General Aspects; b. Biogeography; c. Geology

and Soils; d. Morphology and Taxonomy; e. Physiology; f. Ecosystem Analysis. II. Management: a. Forestry; b. Shellfisheries; c. Finfisheries; d. Agriculture. III. Conflicts: a. Natural vs. Social Values; b. Methods for Resolution of Conflicts. All papers presented at the Symposium will be published in the proceedings. In addition, manuscripts of substantial content are solicited from authors unable to attend the Symposium. At least partial travel support may be available to participants. Twenty minutes is scheduled for presented papers.

Abstracts (200-400 words) of papers for publication should be sent to: Dr. Gerald E. Walsh, U.S. Environmental Protection Agency, Gulf Breeze Environmental Research Laboratory, Gulf Breeze, Florida 32561, U.S.A., by 1 April 1974. It is anticipated that the final program will be arranged and selection of manuscripts to be published will be completed by 1 May 1974. The Organizing Committee cannot guarantee acceptance of every manuscript submitted for publication. All accepted manuscripts must be received by September 1, 1974.

The Australian Systematic Botany Society was formed at a meeting of botanists in Melbourne, on 7 April, 1973. Its aims are: 1) To promote the study of systematics; 2) To encourage and facilitate the dissemination and exchange of information among all those interested in the taxonomic botany of the Australian region; 3) To stimulate and assist systematic research and teaching in the Australian region.

Council: T. W h i f f i n (President); D.J. Carr (Vice-President); D.J. McGillivray (Secretary); A. Kanis (Treasurer); D. Boyland; A.S. George. Persons interested in the Society, or in its aims, are encouraged to communicate with any of the Council Members.

Membership is open to all those interested in Systematics. Persons wishing to become a member may do so by sending a subscription to the Treasurer, Dr. A. K a n i s, Herbarium Australiense, CSIRO, P.O. Box 1600, Canberra City, A.C.T. 2601. The subscription is set at A$3, or US$5 for overseas members. A news bulletin, issued approximately three times a year, is planned for circulation to members.

"The Role and Goals of tropical Botanic Gardens" is the title of a Symposium planned to be held at Kuala Lumpur on 25-29 August 1974, to be held on the occasion of the official opening of the Botanic Gardens of Malaya. Invitations will be restricted to 75 participants. Topics will be: Functions, Responsibilities, Garden Development, and Arrangement, Utilization and Conservation. The symposium is organized by Prof. W. R. S t a n t o n and Dr. B. C. S t o n e, Botany Department, School of Biology, University of Malaya, Kuala Lumpur.

d) Conservation:

TJIBODAS IN DANGER !

> "It is precisely this Reserve which has been subject to so many scientific studies, that makes Tjibodas a treasure for international science".
>
> C. G. G. J. van Steenis, The Mountain Flora of Java, page 6 (1972).

The photograph on the cover was taken in the heart of the Cibodas (formerly spelled Tjibodas) forest reserve. On my walk up the familiar slope of Mt. Gedeh towards the Cibeureum (formerly Tjibeureum) waterfalls, in early August 1973, I suddenly found myself face to face with a man who carried a shotgun. When I inquired what he was doing, he somewhat hurriedly disappeared. Not far from that place I discovered a site where men were sawing a tree to planks. When I asked them whether they knew that they were in a nature reserve, they said nothing; when after some time I returned, they, too, had gone, and I took the photograph which shows how a tree has already been sawn to pieces.

The people at the Cibodas garden and laboratory shared my indignation. They were well aware of the sly destruction that was going on in the reserve, they said that great damage had already been done, and even expected that most of the natural vegetation will be gone in five years. But since the Cibodas nature reserve had been transferred from the Lembaga Biologi Nasional to the Forestry Service, they now lacked the authority to stop the illegal hunting and cutting.

Of course, it is very sad to see that damage is inflicted on any nature reserve. But the case of Cibodas is a very special one. It is probably the first established nature reserve in the country: 1889 (up to the hot springs, extended to the summit in 1924, altogether 1200 hectares). But since 1840 an unbroken series of biologists have worked on the richly forested slopes of the twin volcanoes Gedeh and Pangrango. Teijsmann there set up many of his experiments to naturalize plants in Java, of which Cinchona is among the best-known.

In 1890, S.H. Koorders started to map and to number trees in the forest, for the collection of material in flower and fruit, which attracted the attention of E.D. Merrill. Bruggeman extended Koorders's work; later Baas Becking used their data for a study on the age of the trees in connection with changes in the forest composition.

In 1891 Treub had a simple field laboratory set up, one of the world's earlier biological stations, and set in motion a stream of visitors from all over the world; the list of their names, hundreds of them, sprinkled with celebrities. The 'Selected botanical bibliography' produced by these workers gives 246 entries. Among them is the 3-volume Flora von Tjibodas (1918-1923) by S.H. Koorders, in which all the 760 species of phanerogams have been written up, W.M. Docters van Leeuwen's classic Biology of plants and animals occurring in the higher parts of Mount Pangrango - Gedeh in West Java (1933), F.W. Went's pioneer study on the sociology of epiphytes (Ann. Jard. Bot. Btzg 50, 1940), and, recently C.G.G.J. van Steenis's The Mountain Flora of Java (1972).

About half the colour plates in this magnificent book were made in the Cibodas Reserve, and chapter 2, 'Historical Sketch',* is largely devoted to an explanation of the importance of Cibodas-Gedeh.

This must be enough to stress the significance of just this nature reserve to international biology, and the incredible and irreplaceable loss that the world would suffer if destruction is allowed to proceed. To be sure, the management of the Lembaga Biologi Nasional — under which the garden and laboratory now resort, but not the reserve — is well aware of the danger, and voices of knowledgeable persons in Indonesia have already been raised. Authorities have been approached as well as the press, and the affair made headlines in the daily 'Sinar Harapan' of 13 September.

However, this is an affair entitled to maximum support from outside Indonesia as well. The readers of this Bulletin together form the best-qualified body to appreciate what it means if the Reserve suffers even the slightest damage. I therefore invite each of you to write a letter to the Editor, Flora Malesiana Bulletin, Rijksherbarium, Schelpenkade 6, Leiden, Netherlands, of which then copies will be sent to the Director, Lembaga Biologi Nasional at Bogor, and to the WWF-IUCN commission on Indonesia at Morges, Switzerland, in support of our joint efforts to save Cibodas. Money is not needed, for the time being.

* Other important general accounts in English can be found in P. Honig & F. Verdoorn (ed.), Science and Scientists in the Netherlands Indies, where a special section was devoted to the 'naturalist's paradise' on p. 403-416 (1945), and in this Bulletin no. 10, p. 312-351 (1953).

Gunung Leuser Nature Reserves, Atjeh. The first of these several adjoining reserves, together ± 6500 sq.km in size, was established in 1934, much on instigation of F. C. v a n H e u r n. Like the wings of a butterfly, the reserves spread on the map of northern Sumatra, on both sides of the Alas River. The highest peak is non-volcanic Mount (= Gunung) Leuser (sometimes spelled Losir or Löser), 3466 m high. Many more tops exceed 3000 m. Only 10-15% of the heavily forested area is in the lowlands; the terrain is extremely rugged and badly accessible, in fact, still largely unmapped. Rainfall is high. Orang-utans occur, tigers and two species of panther, Sumatran rhino and elephant, Malayan boar, tapir, and many monkeys. Bird and insect life is extremely rich and varied; so is the flora. Rafflesia abound. Some tops were botanized by V a n S t e e n i s during his big expedition of 1937.

In the 1960's, the reserves, which so far existed only on paper, became endangered, notwithstanding the efforts of Mr. K. S. D e p a r i, a keen conservationist at Pematang Siantar, who had a long-standing interest in the Leuser. Partly on his advice, in 1970 a multi-discipline committee of conservationists was established to develop the reserves, under chairmanship of Dr. J. H. W e s t e r m a n n, secretary of the WWF Netherlands Appeal. This Gunung Leuser Committee has concluded a three-party agreement with the Indonesian Government and the World Wildlife Fund, and now coordinates all efforts at research, management, and financing. The Committee operates in close collaboration with Mr. W a l m a n S i n a g a, Head of the Division Nature Protection and Wildlife of the Forestry Service (Dinas P.P.A.) at Bogor, who set up a chain of rangers to patrol on bicycles. Funds for management were collected during a nation-wide action in the Netherlands. Research has largely been financed by WOTRO.

After Dr. F. K u r t, a Swiss zoologist, had made an extensive survey, in 1971 Mr. H. D. R i j k s e n, a veterinarian with a deep interest in primates, settled at Ketambe, N. of Kutatjane in the Alas Valley. He set up a rehabilitation station for confiscated orang-utans, and displayed many various activities to promote conservation in the region. Recently, Mr. F. R a p p a r d, a former Forest Officer and expert in legislation, paid a long visit there to assist in making a plan for the marking of the boundaries, by the Forest Service.

Botanical collecting was entrusted to Dr. and Mrs. W. J. J. O. d e W i l d e (see Exploration); their work is seen as a first step to arrive at a preliminary inventory of the

flora; this is to be followed by making a vegetation map and eventually ecological studies, by field botanists. Botanists of the Herbarium Bogoriense (D r a n s f i e l d, M u c h - t a r, R i f a i, D e V o g e l) have visited the area and made collections. Two Swiss ladies are making efforts to set up a second orang station at Bohorok on the Medan side. Dr. O. S o e m a r w o t o, professor of Biomanagement at Bandung University, has taken a lively interest, and hopes to send collaborators there.

When Mr. Rijksen will leave, in mid-1974, the time has come to decide how to proceed. Magnificent research is waiting to be attempted, and hope exists that a field station, however modest, can be established. The editor of this Bulletin, who is a member of the Committee, will be glad to take up contact.

Conservation in Papua New Guinea. Self-government of the eastern half of New Guinea with adjacent islands on 1 December 1973, to be followed by complete independence in the course of 1974, naturally draws attention to the conservation situation. A few impressions from my visit in the 2nd half of 1973 are therefore given. Some literature has been reviewed at the end of this article.

Conservation has yet to be incorporated in the official policy of the Department of Forests. Although there is an understanding of conservation among some of the employees, the prevailing attitude is still an exploitative one. Reforestation occurs at a small scale, and there are no such things as forest reserves. Huge tracts in the Central Highlands have been deforested. Birds and mammals are ruthlessly hunted. The allegedly wide-spread positive attitude towards conservation in the local population offers in itself no guarantee whatever that any primary vegetation will remain intact. Nor does the tenure of land by the population.

Some private initiatives have been taken. There is the Hallstrom, now Baiyer River, Bird of Paradise Sanctuary, N. of Mount Hagen, but the able expatriate manager will have to go by September 1974, in favour of a local. There is the Bensbach game reserve and deer park, where facilities for tourism are now in process of construction. The Papua New Guinea Scientific Society in Port Moresby sees its ranks diminishing as many expatriates leave. A similar society, more popular in character, is now being established in University circles.

Experts agree that legislation is good*, but thinking is still preoccupied with the protection of individual species and too little concerned about large-scale removal of vegetation. Yet there are still many places where primary for-

ests come down to the sea; in Papua there are vast pristine forests, the population is sparse, and although birth control is still to be linked to environmental affairs, there are signs of hope.

Two agencies are now actively and successfully working for the good cause. The first is the Wildlife Section of the Department of Agriculture (DASF), P.O. Box 2417, Konedobu (near Port Moresby), chief is Mr. Max C. Downes, the second is the National Parks Board, P.O. Box 5749, Boroko, Port Moresby, executive director is Mr. Neville C. Gare. The latter agency resorts under the Minister for Lands and Environment, as an independent body, of a chairman and four members, advised by a Scientific Advisory Committee of 11 (chairman Dr. Dorothy E. Shaw), of which the executive director is also a member. Between the two agencies there is a close and cordial collaboration. While the Wildlife Section has a greater field staff and is active in management (crocodile farms in the Fly River area, a deer park on the Bensbach River in the SW., bird protection in New Britain, and a Bird of Paradise project), the National Parks Board aims at improving legislation, in consultation with other agencies, and, of course, the design of national parks. It is hoped that an interdepartment body can be formed, drawing on various expertise. Although conservation is but one of its many problems, the government is sympathetic.

Conservation in Papua New Guinea has a few features of its own. The land is owned by the local people. It is they who must be made aware of the value and advantage of conservation, and be persuaded to give up the land. Besides surveying and mapping, much effort and patience is therefore spent on talks with the population in an area where a nature reserve is to be established. It is evident that this concept has great value in other parts of the world as well. If a government outright declares a national park, the people around it will look upon it as something alien to them and they will continue their poaching, cutting, and burning as long as possible. If through consultation and persuasion, they are enabled to understand conservation and to identify themselves with the reserve, they may vastly contribute to the effectiveness of the protection measures. Most depends here on the least educated!

In connection with this, it is found useful to go through a long period of transition, before an area is actually a National Park. During that period, the government may take an option on the land, and already purchase certain rights off the people, e.g. hunting and timber rights.

A third feature peculiar to conservation in Papua New

Guinea is so-called peaceful exploitation. Under this concept, people are allowed to hunt by their traditional methods, which often respects the balance of nature. When eggs are harvested, for instance, traditionally a certain part of them are left in peace. If no shotguns are used, most animal populations can stand this manner of exploitation. It is easy to see how important it is, thus to enlist the cooperation of the local people. Nevertheless, this is not always sufficiently understood by conservationists in other parts of the world where not any more bows, arrows, and spears are used like they widely are in New Guinea. Yet it seems, in this country, the obvious policy to follow, in line with a view on nature as a system of balances and therefore capable of adjustment if exploited with restraint.

The present Park area is still small: 1050 hectares at Wariarata, 50 km from Port Moresby in the Astrolabe Range, and the MacAdam Park of 2060 hectares near Wau. Work is in progress to create Parks on Mt. Wilhelm, Mt. Victoria, the Bensbach Plains, and the Kokoda Trail. More areas are under consideration.

* However, I quote from A.B. Costin & R.H. Groves (ed.), Nature conservation in the Pacific, p. 2: "the fairly recent law passed in New Guinea to protect seven of the world's largest butterflies may be contributing to their disappearance by attracting attention to them."

Some literature:

Schodde, R., General problems of fauna conservation in relation to the conservation of vegetation in New Guinea. In A.B. Costin & R.H. Groves (ed.), Nature conservation in the Pacific, p. 123-144 (Canberra 1973).
Bird populations are accepted as indicators for areas to be conserved, since birds are the best-studied group of animals and are assumed to reflect floristic diversity as well. Grassland, swamps, savanna, alpine meadows, rain-forest are briefly described with their bird fauna, 'heathland' is also mentioned although botanists are in doubt about its occurrence. Some species are named from various heights in the canopy and altitudes. Secondary vegetations have a poor fauna.
Because of their multiplicity of biotopes, the seemingly immense stretches of primary rain-forest are effectively smaller than they appear to be. Transects from low to high altitude cover more plant and animal taxa than do plots in one altitudinal zone. With this in view, 18

plots all over New Guinea and islands are briefly characterized in their value; a sketch map has been given, but their outline is still academic.
Problems are education, law enforcement, the complex land tenure system, and introduction of feral species.

Schultze-Westrum, T.G., Conservation in Papua and New Guinea /Final report on the 1970 WWF-mission, 46 pp., mimeographed. Address author: 8131 Assenhausen am Starnberger See, Germany.
The most allround publication on the subject, balanced and well-written. Basic considerations are given, with conclusions for a policy. Traditional culture is included in the concept of conservation. A number of projects are proposed. Aspects of species preservation are discussed for animals; introduced animals are considered. The proposals are less complete in their coverage of biotas than are Schodde's. Some literature is mentioned.

Schultze-Westrum, Thomas, Neu-Guinea / Papua — Urwelt im Aufbruch, 220 pp., 103 phot., map. (Kümmerly & Frey; Bern 1972). DM 48.
Magnificent photographs, mostly in colour, with popular text. The book is remarkable for having been written from the conservationist's viewpoint; as such it is much of an elaboration of the 1970 report, once again emphasizing the unity of nature and culture conservation. Descriptions of the Kerewo-Turama delta, the Bensbach plain, Mt. Bosavi and, briefly, Mt. Wilhelm, all proposed for conservation. Extensive explanation of photographs added. Recommended by WWF.

Shaw, Dorothy E. & M.C. Downes, Nature conservation. In P. Ryan (ed.), Encyclopaedia of Papua and New Guinea p. 838-840 (Melbourne 1972).
Legislation and ordinances; account of protected species. Regulation of crocodile trade. Existing Parks briefly mentioned. Future legislation. Informative text; some literature cited.

Womersley, J.S., Conservation of biological and cultural resources in Papua and New Guinea. Ann. Rep. Proc. Pap. New G. Sc. Soc. 20 (1968) 18-25.
General considerations; traditional culture included. Emphasis is on protection of single species.

Some notes kindly supplied by Mr. Gare (now Box 1937 Canberra), too late for this issue, will be printed in the next.