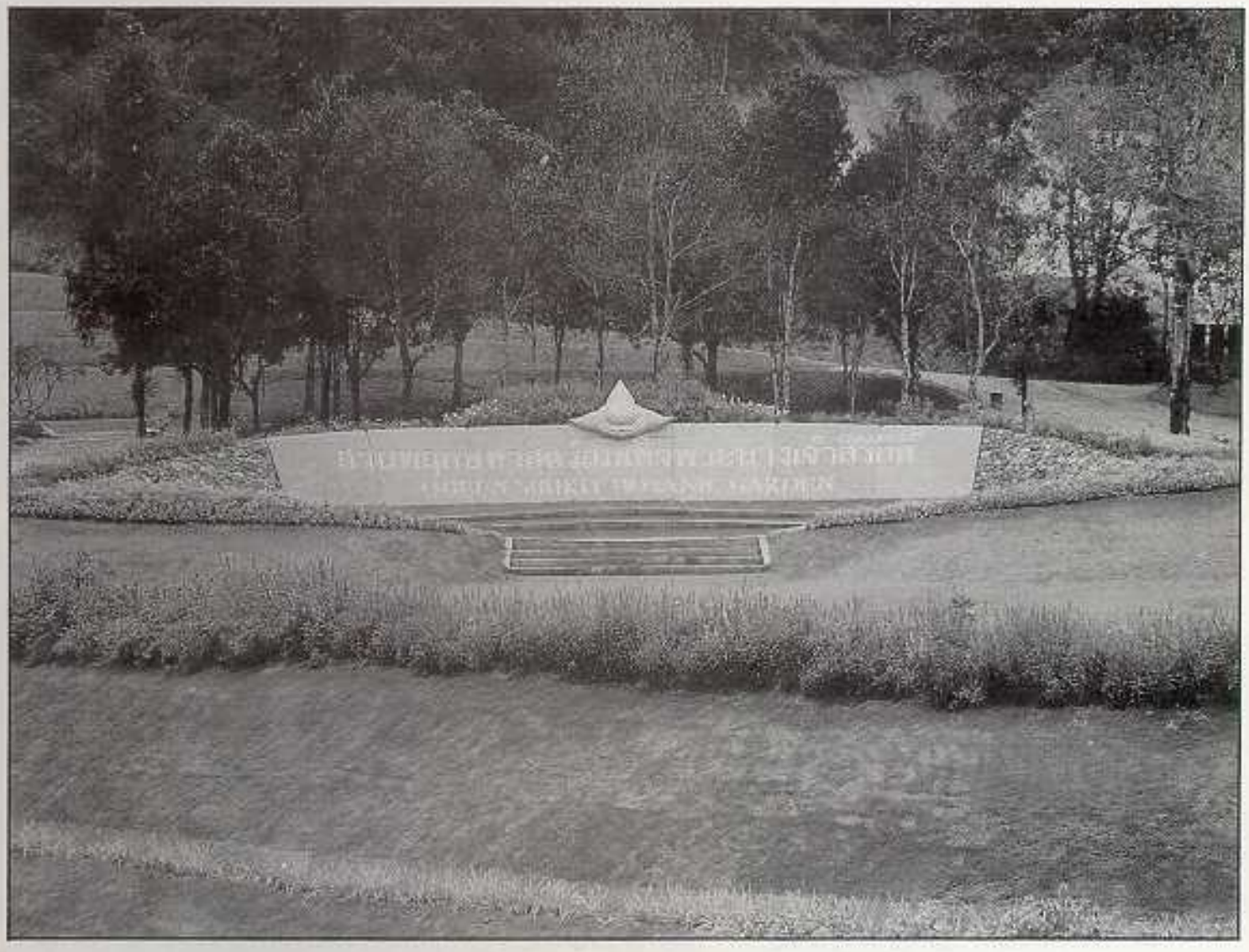
THE BOTANICAL GARDEN ORGANIZATION
PRIME MINISTER'S OFFICE
HEADQUARTERS :
P.O. BOX 7, MAERIM, CHIANG MAI 50180, THAILAND.
PHONE (053) 299-753, PHONE/FAX. (053) 299-754

BANGKOK OFFICE :
THE PRIME MINISTER'S OFFICE, DUSIT, BANGKOK 10300
PHONE/FAX. (02) 280-2907

NEWSLETTER

Number 03 **October, 1995**



BOTANICAL GARDEN SIGN

The construction of the "Queen Sirikit Botanic Garden" sign has been completed. The sign locates near the front gate and clearly seen from roadside. It has been made of 8 pieces of granite rocks, each 250 x 250 x 80 cm. and weight 8.5 tons a piece. The rocks has brought from Tak province by truck and trailer of which 300 km. from Ching Mai. The period of the construction and engraving were 4 months from November 1994 to February 1995. The lawn and the area near by are now decorating by the Garden's landscape Architecture.

BOARD MEMBERS

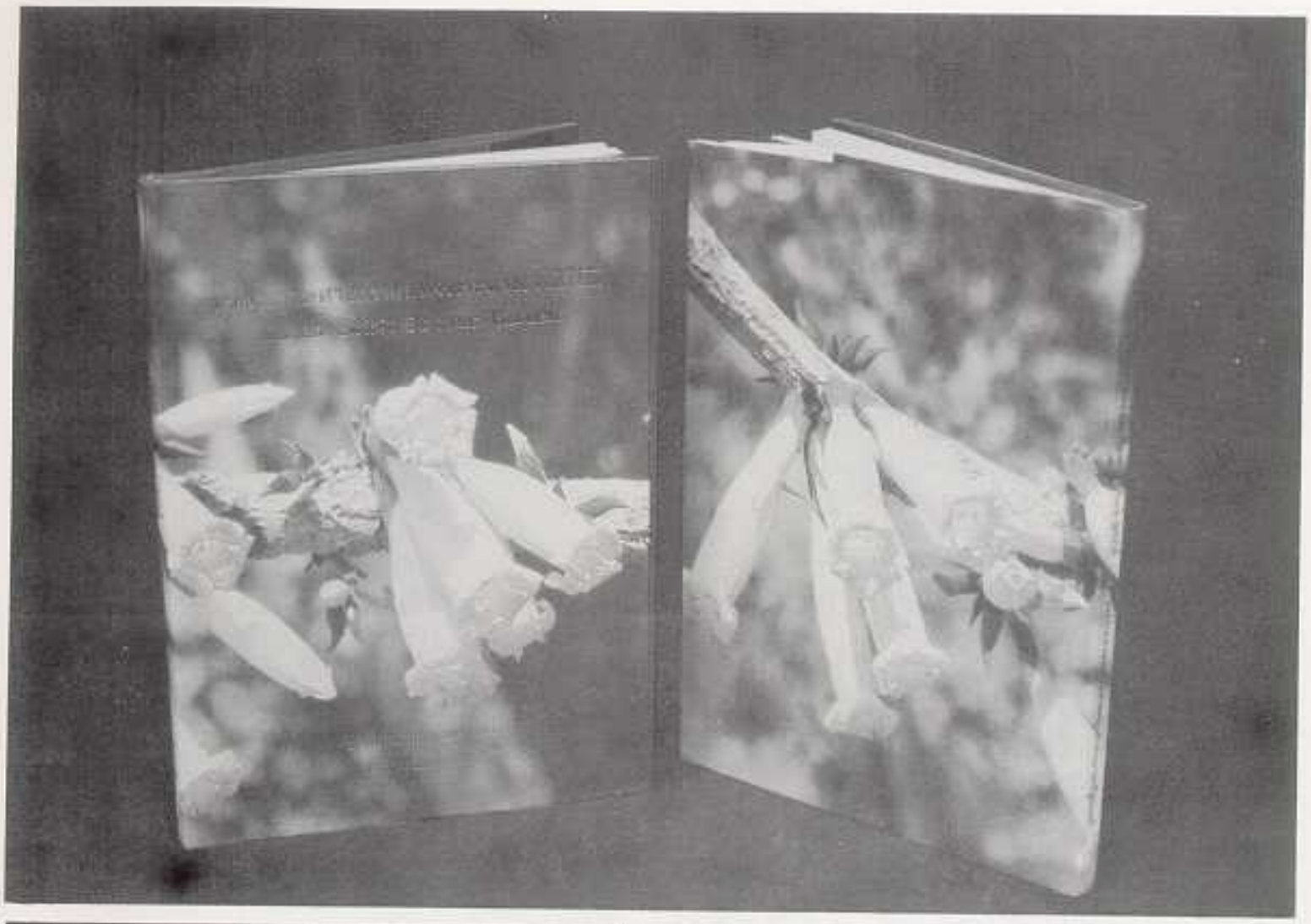
THE BOTANICAL GARDEN EXECUTIVE BOARD

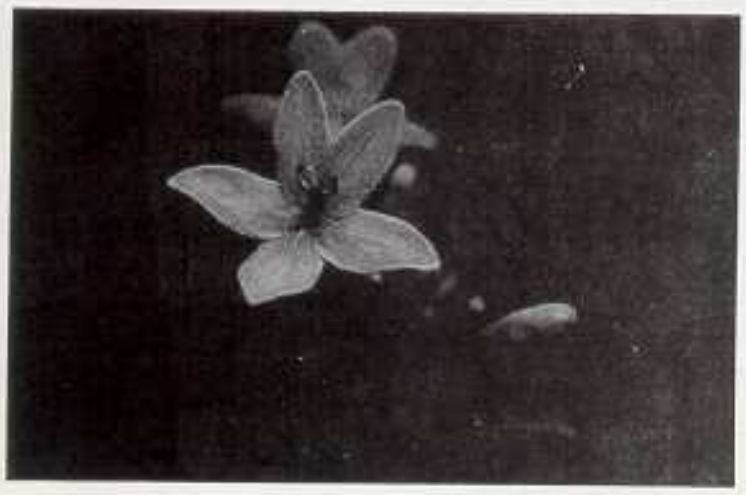
1. Professor Sanga Sabhasri	Chairman
2. Mr. Alai Ingavanij	Committee
3. Dr. Thawatchai Santisuk	Committee
4. Mrs. Umporm Lekuthai	Committee
5. Dr. Nalin Nilubol	Committee
6. Mr. Suwit Wangpushkane	Committee
7. M.L. Charuphant Thongtham	Committee
8. Dr. Chamlong Phengklai	Committee
9. Professor Nakhon Nalampang	Committee
10. Professor Anon Thiangtrong	Committee
11. Dr. Weerachai Nanakorn	Committee & Secretary

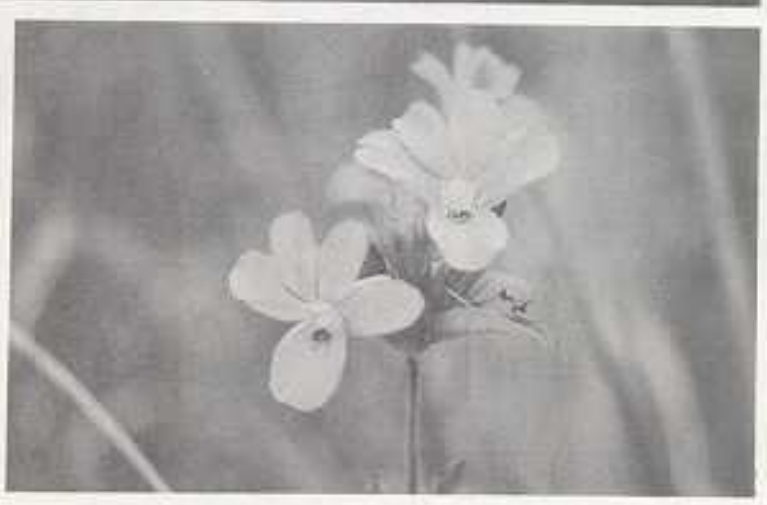
THE BOTANICAL GARDEN HONOURARY & ADVISORY BOARD

1. M.C. Bhitsatej Rajani	Thailand
2. Air-force General Kamthon Sinthuvanon	Thailand
3. Mrs. Nongnut Tansatjaa	Thailand
4. Professor Ghillean T. Prance	England
5. Professor Tetsuo M. Koyama	Japan
6. Professor Kunio Iwatsuki	Japan
7. Professor Kai Larsen	Denmark
8. Professor Mike Balick	U.S.A.
9. Professor Peter H. Raven	U.S.A.
10. Professor Bertil Nordenstam	Sweden

FLORA OF QUEEN SIRIKIT BOTANIC GARDEN



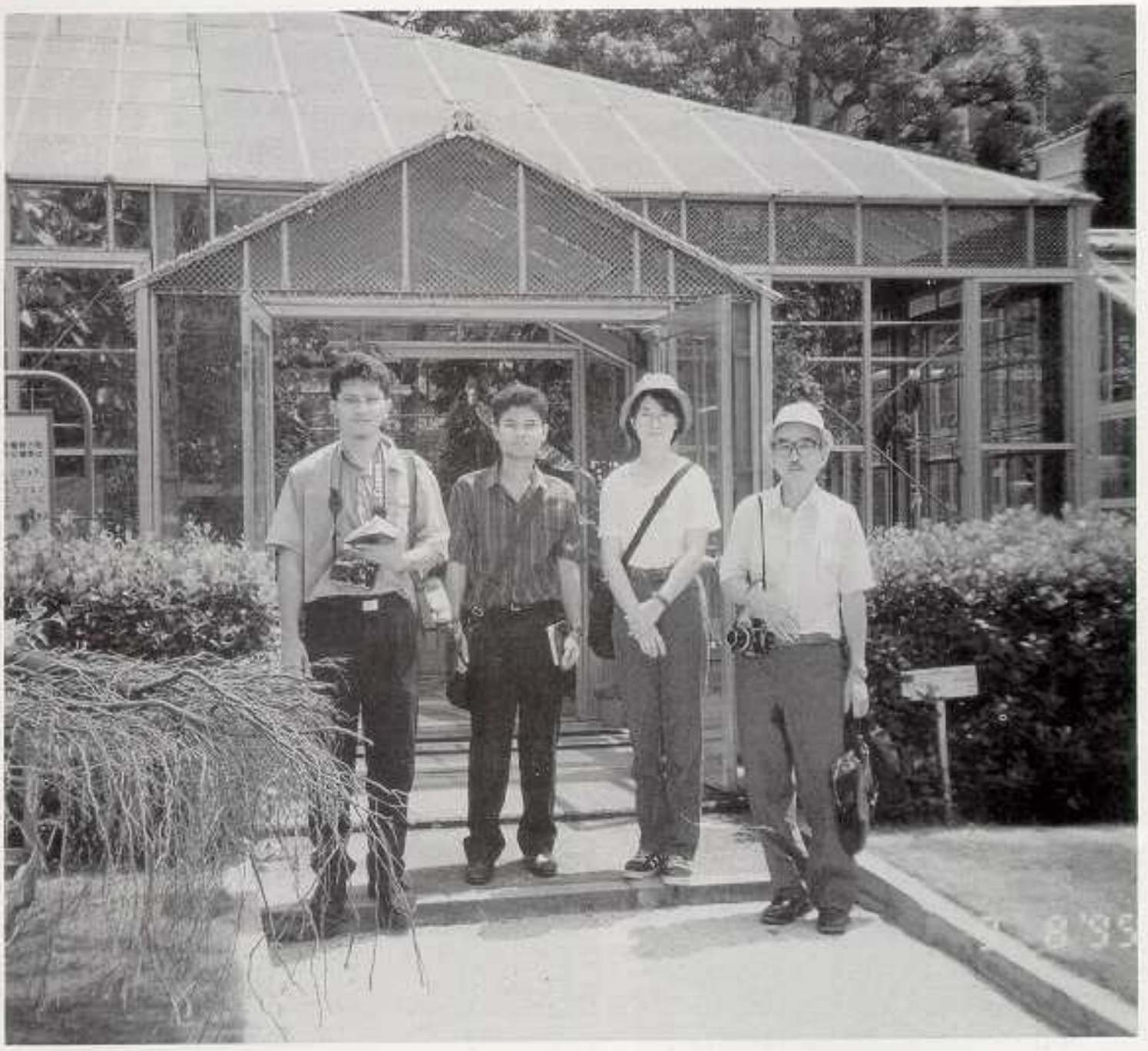




The book on flora of QBG which focuses on what are found or collected in the QBG and on Doi Suthep in Chiang Mai (volume 1) is finished. Over 100 colourful pictures of the Thai flora and details of their descriptions and data on habitats, localities, distribution and information on their uses were included in this book.

Volume 2 is going to be distributed to libraries and educational institutes within this coming October 1995.

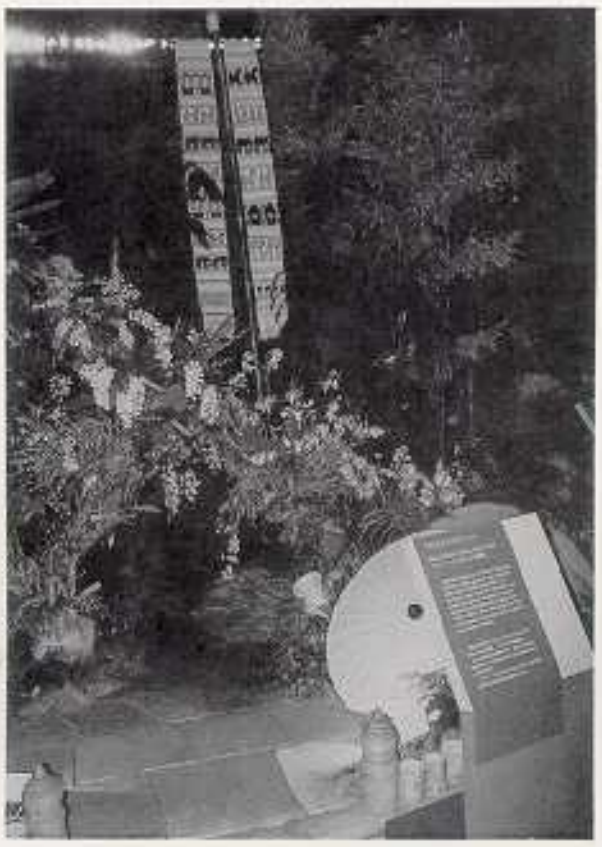
QBG STAFF TRAINING IN JAPAN



During July 20 to August 21, 1995,. three officers of Queen Sirikit Botanic Garden : Dr.Weerachai Nanakorn, Mr. Santi Watathana and Mr. Monton Norsaengsri, received fellowships from JBA (Japan Bioindustry Association) for an educational trip to Japan's Herbarium and Botanic Gardens: Tsukuba Botanical Garden ; Botanical Garden and Herbarium Faculty of Science ; Osaka City University ; Medicinal Plant Garden and Herbarium ; Nihonshinyaku company ; Medicinal Plant Garden and Herbarium ; Takeda company ; The Kyoto Botanical Garden ; Monyo Botanical Garden, Nara City and botanical gardens ; Rakusai Bamboo Park, in Kyoto.

They also had the opportunity to visit the reforestation project in northern Kyoto which represents temperate forests and collected some 160 specimens of Japanese plants for study. All specimens are now being kept at QBG Herbarium.

QBG JOIN THE 5th ASIA PACIFIC ORCHIDS SHOW AND CONFERENCE



During March 8-22, 1995 Dr. Weerachai Nanakorn, Director of the QBG and 3 botanists Mr. Paisan Thongsorn, Mr. Somkuan Sukaim, and Miss Surangraj Indhamusika paid a visit to attend the 5th Asia Pacific Orchids Show and Conference which was held in Fukuoka City, Japan. They brought several kinds of Thai orchids to put on display at the show. Dr. Weerachai also gave a lecture on "Status of the Thai Orchids in Northern Thailand"

The activity attracted much attention, and helped publicise the Botanic Garden Organization and Thailand as a whole.

PARATAXONOMY TRAINING

Between May 15-21, 1995, the Botanic Garden Organization under the Prime Minister's office, in copperation with FAO, and the National Centre for Genetic Engineering and Biotecnology, Ministry of Science, Technology and Environment, held a workshop on "Parataxonomist" to provide the public with knowledge on plants, and for village people whose work is involved with plants, so they can make use for their further education, research and natural resources conservation.

The program, attracted much attention from community leaders, teachers, and researchers totally over 40 person

Apart from drawing together personel interested in botanic work at local level, the workshop was also a storming of local wisdom in studying Thai plants which will benefit the whole country in the future.

STAFF PERSONNEL IMPROVEMENT SEMINAR

The Botanic Garden Organization held the staff personnel improvement seminar at Huai Pong Krai Watershed Unit in Chiang Mai on August 11-12,1995.

The seminar was aimed at providing opportunity for all the staff to have mutual understanding of Queen Sirikit Botanic Garden's objectives, the principle of effectively working, and to exchange their ideas, to find the way for solving the problems. The seminar was proved successful.

On the following day, participants also joined in an activity to pay tribute to Her Majesty the Queen's birthday anniversary on August 12, 1995.

RETURN ORCHIDS TO THEIR NATURAL HABITAT

On July 12,1995 at the Queen Sirikit Botanic Garden, Army Commander-in-Chief, General Wimol Wongwanich presided over the orchids planting ceremomy under the "Return Orchids to their Natural Habitat" project .

The orchids were bred by Maejo Institute of Agricultural Technology. On the day, the working group and students from several institutes, totalling 800, took part in the activity in response to Her Majesty the Queen's initiation to conserve Thai Orchids.

NAA HAEW RESEARCH GRANT

The National Center for Genetic Engineering and Biotechnology, Bangkok, has offered a support for the Botanical field work to survey and collect the plant specimens at Amphur Naa Haew, Loei province. An amount of 140,000.- Bht. has been allocated to the Technical Section, Queen Sirikit Botanic Garden for a one year activity. The study area locates at the boundary adjoining to Thai and Laos with a lush vegetation of hill evergreen forest. This locality so far has never been explored by Botanist. The activity has started since April 1995 so far over 600 specimens has been collected and deposited at QBG Herbarium.

SEMINAR ON FUTURE OF THE QBG RESEARCH WORK

During August 19-20,1995, the Botanic Garden Organization arranged a seminar on "Future of the QBG Research Work" at the auditorium of Faculty of Agriculture, Chiang Mai University.

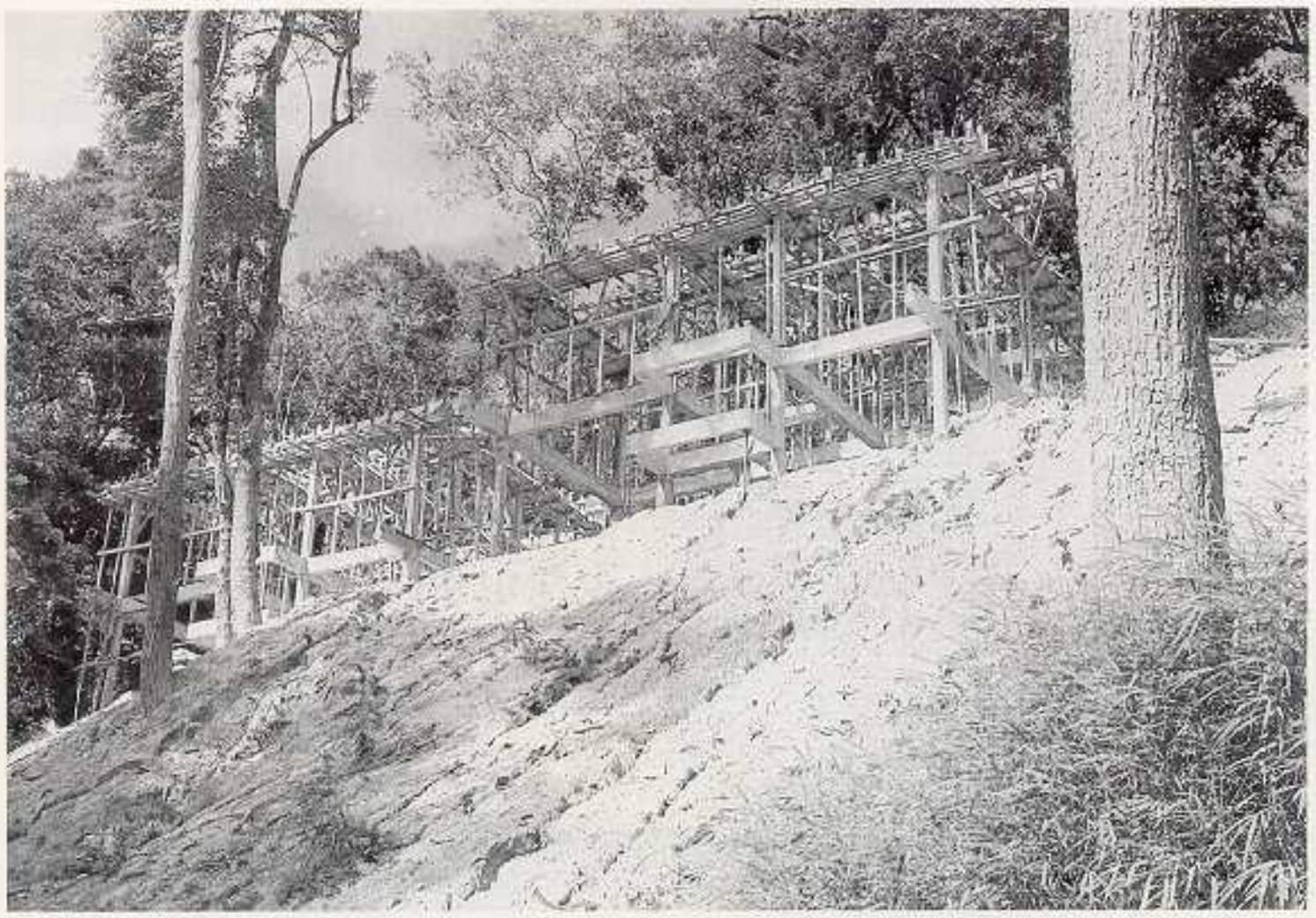
This is the second meeting of QBG semminar on research work. The purpose of the meeting are to gather Botanists and scientists in relevant field to draft a masterplan for QBG research work. The seminar has a great success and fruitful result.

AJINOMOTO FOUNDATION SUPPORTS QBG ACTIVITIES

A grant an amount of 100,000 Bht was allocated in July 1995 in order to make a vegetation survey inside the garden's area. The study is conducted by Botanist team of QBG under the guidance of Dr.Weerachai Nanakorn.

Two plots the size of 40 x 40 meter were laid at every 100 meter level different this from 600-1,200 meter. The result will be published in the Flora of Queen Sirikit Botanic Garden (Vol. 2).

PROGRESSION OF CONSTRUCTION



The construction of majors buildings of QBG are in satisfactory progress. They are Administration building, Visitor Centre and Staff housings

Visitor Centre : Situated infront of the garden, a two-storey building in Lanna style which will provide services for visitor and tourists. The construction is expected to be completed by July 1996.

The Administration Building : the two-storey building is situated in the East of the garden, the outline of the building is in typical Northern Thai Style. The construction is expected to be completed by June 1996.

The Staff Housings : The building is in the North of the Mae Rim-Samerng Road, opposite to the garden. It comprises of 3 single houses and 2 units of 2-storey building. The construction is expected to be commpleted by January 1996

VISITORS

Queen Sirikit Botanic Garden has been pleased to welcome :

Ambassador of Finland visit QBG

H.E.Eero Salovaara and his wife paid a visit to the Queen Sirikit Garden on November 24,1994 and has planted a tree named "Kluay Pad" (Ravenella Madagascariensis).

M.R.Narisa Sawatdiwat (Chakrabonge):

paid a visit to see the garden on January 3, 1995. She enjoys the Thai plants collection and the vegetation of the forested area inside the garden. In this special occasion she planted a fig tree " Sai bai kaew" (Ficus sp.).

The Botanic Garden Honourary Advisory Board:

Prof.Bertil Nordenstam Director of the Swedish Museum of Natural History, from Sweden one of the Botanic Garden Honourary Advisory Board and his wife paid a visit to the Queen Sirikit Garden on February 24,1995.

He was very pleased with the progression of the establishment and activities of the Garden and plan for future collaboration with the QBG.

Prof. George W. Brown:
Dean, College of Forestry, Oregon State University, USA. Visited The Queen Sirikit Botanic Garden on January 27, 1995.

Staff Royal Botanic Gardens Sydney : Mr. Geoff Breen, Senior Horticulturist (Propagation) from Royal Botanic Gardens Sydney, Australia visited the QBG on March 20, 1995.

Former Minister to the Prime Minister's Office: Mr.Panja Kesornthong paid a visit to the Queen Sirikit Garden on April 21,1995 and has planted a Thai plant named "Lamjiak" (Pandanus tectorius) to mark his visit.

Minister to the Prime Minister's Office : Mr. Rakkiat Suktana who is incharge of the Botanic Garden Organization paid a visit and chaired a meeting of the BGO's Executive Board on August 20,1995. He is very pleased with the establishment and activities of the Garden and propose more support for the garden in the future.

In honour of the Garden and his visit, Mr.Rakiiat Suktana has planted a Thai tree named "Kasalongkham" (Radermachera ignea).

BIORESOURCES IN THAILAND AND SUSTAINABLE UTILIZATION

Professor Sanga Sabbhasri

INTRODUCTION

Bioresources are mankind's present and future life support system. In the past man lived close to nature with abundant bioresources. But as population increased and technology developed, bioresources have been over utilized, so degrading the environment and threatening mankind's future.

It is generally accepted that the health of the earth's environment depends upon its tropical forests teeming with life. Tropical regions hold more than half of the world's bioresources. The bioresources of tropical forests play an important role in activating the economic development processes of the world. For example, more than half of all prescription drugs used in industrialized nations were derived or synthesized from natural sources. But, perhaps as little as 5,000 of 250,000 flowering plants in the world, barely 2 percent, have been analyzed for medicinal purposes. Some 85 percent of food is derived from only 20 species of plants, and two-thirds of this is from corn, wheat and rice. There are at least 75,000 edible plants in existence and many have characteristics superior to currently used plants.

Tropical forests where the majority of the world's bioresource exist, are being depleted at an alarming rate. Since the turn of this century, more than one-half of the world's tropical forests have been lost. The rate of species loss, due to human disturbance, is at least 1,000 times greater than the natural background rate. Although most of the disappearing tropical forests belong to the developing world, the impact of these action threatens the future of both developed and developing nations.

PRESENT SITUATION OF BIODIVERSITY IN THAILAND:

(1). Owing to its location as a center of living organisms from Indo-China, Indo-Malaysia and Indo-Burma, together with its diverse habitats, which span from the dry tropical region in the north to the wet tropics in the south, Thailand is a country rich in natural resources. The country has less than 1 percent of the world's human population and has less than 1 percent of the world's species of plants and animals. However, these species occur in other Asian countries, many of them have the best chance of survival in Thailand with its relatively strong conservation system and environmental protection.

(2). Thailand's biodiversity is currently estimated as approximately 15,000 species of vascular plants and 600-800 species of fishes. But, the flora and fauna are only partially studied. The Flora of Thailand project has completed only 15% of the total species. It will require more than 100 years to complete with the present level of financial support and manpower. The biodiversity of Thailand is one of the country's most undervalued and neglected resources, both biologically and economically.

(3). The wild animals and plants of Thailand are of tremendous importance to the rural economy. Eighty five percent of the Thai people who live in rural areas exploit wild plants and animals. Furthermore wild animals and plants provide the basis for the future social and economic development of the Kingdom. Medicinal plants and natural chemical products are now receiving a major research emphasis at several Thai universities.

(4). The biodiversity of Thailand is being rapidly depleted due to forest alteration, drought, pollution and coastal development. Future global climatic change may severely affect in land communities and aquatic ecosystems.

(5). The government has established an effective system of protected conservation areas soon to reach 15% of the country. This system is highly fragmented, and comprises over 100 separated units; therefore, it needs to be well-managed.

(6). The efforts to conserve and to utilize the rich biodiversity of Thailand must proceed immediately. These efforts can be implemented and sustained with research effort and efficient management.

(7). Research relating to biodiversity is already being conducted at several institutions. These require support from various sources to strengthen their capacity.

(8). The crucial relationship between economic development and sound biodiversity conservation is an essential approach for sustainable utilization of tropical bioresources.

THE COMPONENT OF BIORESOURCES AND SUSTAINABLE UTILIZATION

Our ultimate goal for sustainable utilization of tropical bioresources cannot be achieved without an understanding of the components and the processes which influence their existence. The major components of biodiversity consist of:

LIVING ORGANISMS: This component consists of plants, animals, and microbes. The earth took million of years to build up this equilibrium component. It is man's most valuable resource which provides all basic needs and luxuries. It is exploited extensively, but the value of the whole component is extremely difficult to quantify in terms of economic benefit. Some of the value might be beyond the expectations of present knowledge.

ENVIRONMENTAL/ HABITATS: This component is important as it provides systems to support life. The survival and abundance of the living composition depends greatly on this component. The living component also modifies the environment so giving the variability of habitats. Diverse habitats are necessary to create diversities of life form. Living organisms and their environment have evolved to form a harmony that the unique system of life and diverse species have maintained.

HUMAN IMPACT: We cannot effectively manage the biodiversity issue without considering human impact. This component is increasingly important. Socio-economic developments have made tremendous impacts on both the living and habitat components. Human influence can be either constructive of destructive. Plants and animals have been over utilized on both a local and industrial scales. The living component is diminished, and as a consequence human development is delayed. Population pressure and economic development disrupts the habitats/ environments by the processes of deforestation agriculture, urbanization and pollution. These processes lead to species extinction as well as degrading the quality of human life.

It is important to create a constructive influence to ensure that the biologically rich tropical forests and their habitats are well sustained in correspondence with the processes of economic growth. The primary mechanism to accomplish this objective is through management for sustainability.

MANAGEMENT FOR SUSTAINABILITY

The world is now realizing that new approaches to the management of bioresources are essential. If we are to utilize our resources in a sustainable manner, we must understand the interaction between biological diversity and global processes. What is important here is the connection among biodiversity, environmental processes and utilization. These can be effectively implemented and sustained with research efforts as follows:

(1). **INVENTORY**:

To understand the structure of bioresources

- What do we have?
- How much we have?
- Where they are?

To understand the processes of ecosystems

- How they function?
- What are their fundamental requirements for survival and reproduction?

(2). **MONITORING**:

To observe changes in the structure of biodiversity and functional processes of the ecosystems through out the time.

(3). **CONSERVATION**:

To restore the diversity and abundance of natural species by i.e.

- Provision of basic requirements i.e., foods and habitats, to guarantee their survival and regeneration.
- Protection from anthropogenic and natural hazard.
- Propagation of rare and endangered species.

(4). **UTILIZATION**:

To develop technology for sustainable utilization as follows

- Technology for propagation of plants and animals for industrial purpose as well as conservation purpose.
- Technology for genetic engineering.
- Technology for natural chemical product.

REQUIREMENTS FOR EFFECTIVE MANAGEMENT

Persuasion tools for the effective management of the sustainable utilization of bioresources are essential. These will include:

(1). **Committee on biodiversity research**:

To plan coordinate and provide funding from both the Thai government and other sources for priority research and training in biodiversity in Thailand

(2). **Trained manpower**:

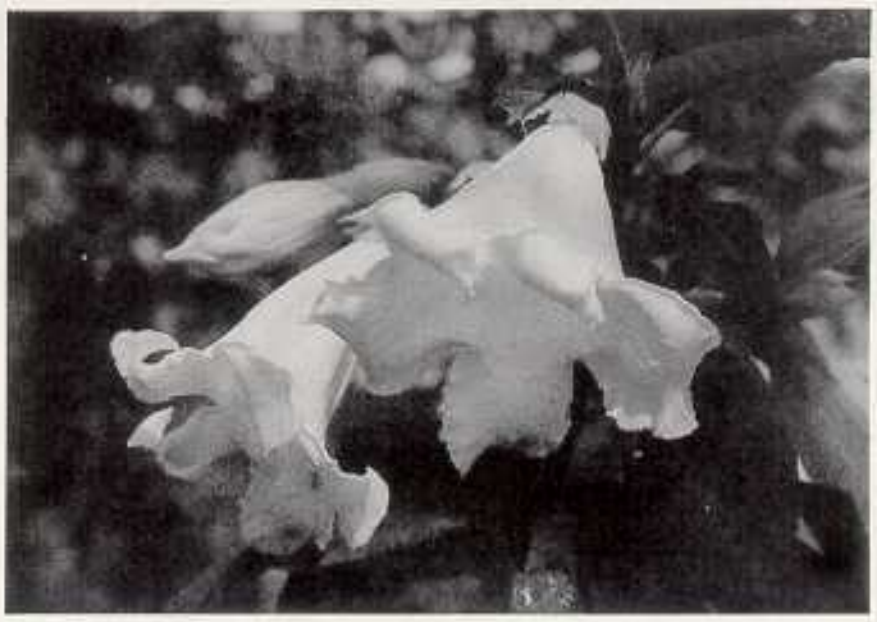
Trained manpower is the most critical need for the long term enhancement of biodiversity project. Experts in the various fields of sciences i.e. Genetics, Biology, Ecology and Biotechnology, are needed.

(3). **Institutions and infrastructures**:

- National biodiversity center
- Regional biodiversity centers
- Field research stations
- Genetic resource centers
- Computerized data-base coordination center for biodiversity

Trained manpower and institutions relating to biodiversity research already exist at several universities and in the government sector. But, the quantity and capacity are far from satisfactory for progress. These organizations require increasing support and more research staff to strengthen this capacity.

In addition, projects which foster better inter-institutional collaboration, including foreign institutions, interdisciplinary work, and the development of long term field research sites for the critical inventory of species and ecosystem studies, are urgently needed.



CONCLUSION

The future economic development of the world depends greatly on biotechnology research on, for example, natural products from native plants, animals and microorganisms from the tropics. Although genetic engineering can manipulate genes in many ways, it cannot create genetic material as diverse and abundant as nature has achieved in million of years. Without native living organisms, the future of biotechnology will be limited. To ensure the existence of native species, effective management should be implemented and biotechnology must extend to cover conservation of species as well as utilizing them. Therefore the long-term economic well being of every nation is met and mutual cooperation remains.

It is obvious, from the United Nation Conference on Environment and Development (UNCED) that utilization of bioresources by the industrial countries which possess technology and the countries which own the bioresources must be on the grounds of mutual benefit.

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161/5-6 Soi Inawar Changpuek, T.Sriphoom, A. Muang, Chiangmai 50200
Tel. (053) 226099, 01-9503483

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PHONE/FAX (662) 280-2907

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