

Gardenwise



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One hundred years ago, *Vanda* Miss Joaquim was revealed to the world as the first orchid hybrid from Singapore. It played a significant role in the origin of the modern orchid industry when several cuttings brought over to Hawaii in 1920 met with such instant popularity that an important cash crop was launched in the Hawaiian Islands. Exotic, elegant and equatorial, *Vanda* Miss Joaquim was chosen as Singapore's National Flower on 15 April 1981. It seems fitting that the centenary year of the discovery of our National Flower is marked with intense activity on the orchid scene.

EXECUTIVE DIRECTOR'S

MESSAGE

orchid industry. As a result of discussions at the Glasgow Conference, a team of international orchid judges came to Singapore in August specifically to tackle this problem during the first International Orchid Show, Singapore '93.

Organised by the Trade Development Board with the help of numerous public and private organisations, the International Orchid Show, Singapore (IOSS '93) is another in a series of activities by our government to revitalise the orchid industry in Singapore. NParks plays a significant part in this process. Not only do we help to promote Singapore's orchids in the international arena through displays, lectures and orchid judging activities, we also chair the Orchid Breeding Sub-Committee of the Orchid Industry Main Committee to help source for new orchid hybrids to fuel the



In the spring of 1993, Glasgow hosted the 14th World Orchid Conference. With the help of Singapore's orchid growers and the Trade Development Board, the Singapore Botanic Gardens staged an exhibit of cut-flower orchids that delighted the crowds with its explosive show of colour. Besides garnering some top awards, this display of Singapore orchids provided grist for discussion among orchid professionals that will translate into greater recognition for the products of Singapore's orchid industry. The participation of NParks in the Conference heightened global awareness that commercial orchid cut-flower production is a growing industry with government support in Singapore. It drew attention to the need to revise judging criteria for the range of orchid hybrids being produced in South East Asia, a move that is very important for enhancing product recognition for the regional

industry. Meanwhile Singapore Botanic Gardens continues to manage the computer database for orchid registration in collaboration with the Royal Horticultural Society, UK, the American Orchid Society, and a group of Australian consultants.

On home ground, work on the new orchid garden is progressing apace. The old orchid nursery has been taken down to make way for earthworks for the new garden. The entire collection has been accommodated in the new nursery that has been completed, with copious spill-over into adjacent space of orchid plants which are slated for landscape use in the new attraction. A publicity campaign has already been launched for this new orchid garden in the Singapore Botanic Gardens. For the first time, we will have a facility for which an admission charge will be levied. Some initial reservations were

Above, Singapore's award-winning orchid display at the 14th World Orchid Conference in Glasgow.

On the cover, *Vanda* Marlie Dolera (*V. Petamboeran* x *V. Sanderiana*), a hybrid with *Vanda* Miss Joaquim in its background.

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100 Years with *Vanda Miss Joaquim*

The year 1993 marks the 100th anniversary of one of the most memorable events in the history of orchidology — the birth of *Vanda* Miss Joaquim, the first *Vanda* hybrid ever registered. The long-lived hybrid is also the National Flower of Singapore. Given these credentials, it seems timely to reflect upon the plant's contribution to the orchid world.

Vanda Miss Joaquim is said to have been first discovered in the garden of Miss Agnes Joaquim in 1893 in Singapore, although it may very well have existed in her garden prior to 1893. It was found growing between some plants of *V. teres* and *V. hookeriana*. Fascinated by her discovery, Miss Joaquim immediately took it to Mr Ridley, the Director of the Singapore Botanic Gardens. After comparing the newly discovered flower with those of *V. teres* and *V. hookeriana*, he realised that the plant was intermediate between the two *Vanda* species. Thus, he suggested that it was a hybrid between the two species. Subsequently, the plant was given the name *Vanda* Miss Joaquim, after the lady who discovered it. In 1981, *V. Miss Joaquim* was chosen to be the National Flower of Singapore.

Parents of *V. Miss Joaquim*, *V. hookeriana* and *V. teres*, are no strangers to tropical Southeast Asia. The former is found in swampy regions in Sumatra, Borneo and the Malay Peninsula; two cultivated varieties are found as well. *V.*



Sprays of *Vanda* Miss Joaquim.

teres inhabits dry areas and is distributed from the Himalayas to Burma, Thailand and Laos; several varieties are found in nature.

No one knows which varieties of the two species are the parents of the original *V. Miss Joaquim*. Holttum gave the original plant the varietal name 'Agnes'.

Several varieties of *Vanda* Miss Joaquim have been created by using different varieties of the parents. They are *V. Miss Joaquim* 'Josephine' (*V. teres* var. *aurorea* with *V. hookeriana* var. *alba*), *V. Miss Joaquim* 'Rose Marie' (*V. teres* var. *candida* and *V. hookeriana*), and the *alba* *V. Miss Joaquim* 'John Laycock' by crossing the *alba* variety of the two parents.

V. Miss Joaquim is said to have taken the form of *V. hookeriana* and the colour of *V. teres*. A robust plant can bear up to 12 or 13 buds. Each flower is about 5 cm wide and 6 cm tall. Like the parents, the petals twist 180 degrees so that their

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voiced by members of the public, but by and large, a pragmatic population has accepted this as a prerequisite for the development of an amenity which will add greatly to the enjoyment of the visitor to the Gardens. Its development will further burnish the reputation of SBG as a vibrant and active institution for tropical botany and horticulture.

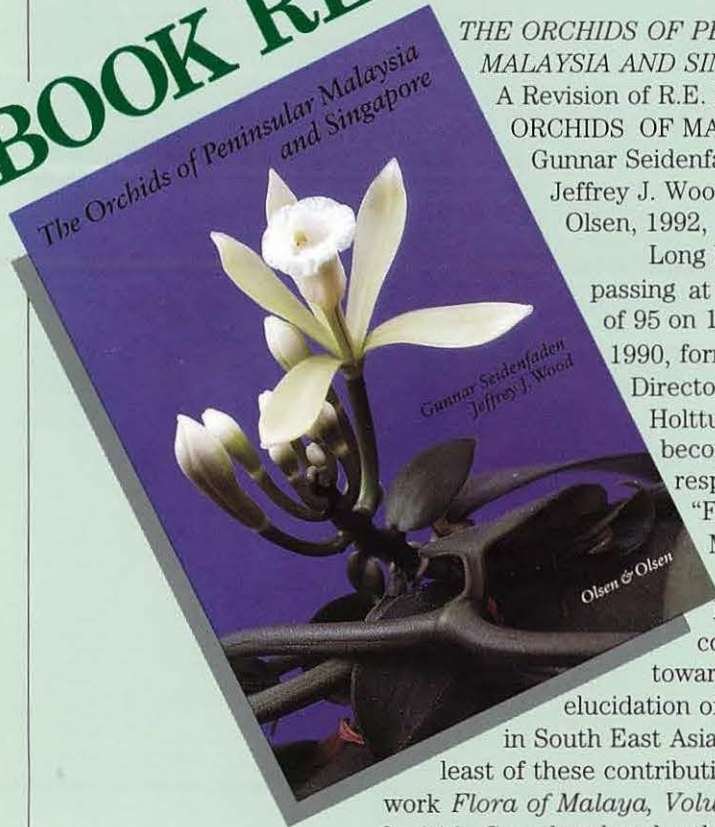
When the new orchid garden opens its doors in November 1994, it will provide the ideal setting for displaying the fruits of the orchid breeding programme of the Singapore Botanic Gardens initiated by

Prof R E Holttum in 1928. Visitors and potential customers for Singapore's orchids will also have the perfect showcase to view the range of orchids produced by Singapore. Finally, our National Flower, *Vanda* Miss Joaquim, will have pride of place in what will be a unique garden dedicated to the exposition of orchids.

Tan Wee Kiat
Executive Director

(Look on p 16 for the contest entry form to name the new orchid garden.)

BOOK REVIEW



THE ORCHIDS OF PENINSULAR MALAYSIA AND SINGAPORE

A Revision of R.E. HOLTUM:
ORCHIDS OF MALAYA by
Gunnar Seidenfaden and
Jeffrey J. Wood (Olsen &
Olsen, 1992, Denmark)

Long before his passing at the ripe age of 95 on 18 September 1990, former Gardens' Director Prof R E Holtum had become much respected as the "Father of Malayan Orchids" for his significant contributions toward the elucidation of orchidology in South East Asia. Not the least of these contributions was his work *Flora of Malaya, Volume I: Orchids*. Completed under the dark cloud

of the Japanese occupation of Singapore from 1942 to 1945, this seminal work on the orchids of the Malayan region was a silver lining that illuminated the orchid community with the appearance of the first edition in 1953. The acuity of his observations and the clarity and precision of his descriptions contributed greatly to the success of this work. More importantly, the facility with which Holtum rendered technical and esoteric topics in a manner readily accessible to the layman went far to ensure the popularity of the book. A third edition was published in 1964.

Holtum's flora remained the definitive reference for orchids of the region until the publication of the present revision, *The Orchids of Peninsular Malaysia and Singapore* by Seidenfaden and Wood. Since the publication of Holtum's book in 1953, much work has been carried out on the orchids of South East Asia. The two authors, Gunnar Seidenfaden and Jeffrey J Wood, have been significant contributors to this remarkable increase in our knowledge of orchids of the region. Gunnar Seidenfaden, with a background of more than 35 years of taxonomic studies of South East Asian orchids, is the preeminent authority on orchid species of Thailand. Jeffrey Wood, Deputy Curator of the Orchid Herbarium of the Royal Botanic Gardens, Kew, has worked

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backs face the front. The petals and dorsal sepal are pink with shades of violet and the lateral sepals are very pale mauve, almost white. The lip is broad with a fan-shaped mid lobe of rosy violet with a bright orange yellow throat spotted in dark purple.

A lot has been done to improve the original *V. Miss Joaquim*. The first one was a diploid with $2n = 38$ chromosomes. Hawaiian breeders selfed the plant many times to produce several outstanding tetraploids ($2n = 76$). Some of the better known varieties are Atherton, Juliet, Hula Girl, Woodlawn and Douglas. These are much larger in size and have better form than *V. Miss Joaquim* 'Agnes'. Most of the hybrids of *V. Miss Joaquim* have been derived from these tetraploids.

Probably one of the earliest vandas to be employed for hybridisation, *V. Miss Joaquim* has been used extensively for breeding. As at the end of 1990, there were a total of 83 first generation, 152 second generation, 108 third generation, 31 fourth generation, 5 fifth generation

and 1 sixth generation hybrids of *V. Miss Joaquim*.

Among all the first generation hybrids of *V. Miss Joaquim*, several are particularly outstanding. They are *V. Cooperi* (*Vanda hookeriana* x *Vanda Miss Joaquim*); *V. Mevrouw L. Velthuis* (*V. Miss Joaquim* x *V. sanderiana*); *V. Colourful* (*Vanda insignis* x *V. Miss Joaquim*); *V. Alice Laycock* (*V. Miss Joaquim* x *V. sumatrana*) and *V. Princess Beatrix* (*V. coerulea* x *V. Miss Joaquim*).

Some of the outstanding second generation hybrids are *V. Norbert Alphonso* (*V. Alice Laycock* x *V. Cooperi*); *V. Poepoe* (*Vanda Cooperi* x *V. teres*); *V. Candlelight* (*V. Cobber Kain* x *V. sanderiana*); *V. Petamboeran* (*V. foetida* x *V. Miss Van Deun*); *V. B.P. Mok* (*V. Sumarie* x *V. Miss Van Deun*); *V. Ruby Prince* (*V. Ruby* x *V. Cooperi*) and *V. Nam Kee* (*V. Cooperi* x *V. Marguerite Maron*).

Several third generation hybrids are particularly popular, such as *V. Prolific*

extensively on orchid taxonomy in several parts of South East Asia. He is currently working on the orchids of Borneo.

Seidenfaden and Wood have incorporated more than 200 new species names in their revision. They have updated the classification and nomenclature of Holttum's work in view of the new information that has accumulated. Species descriptions have been supplemented with analytical drawings of nearly all of the 800 species in the text. Identification is facilitated by the inclusion of colour photographs of 192 species. In sharpening the focus of this revision, material on cultivation, hybrids and exotic species has been omitted. Biographical notes on some collectors in Malaya and a useful bibliography and glossary have been added.

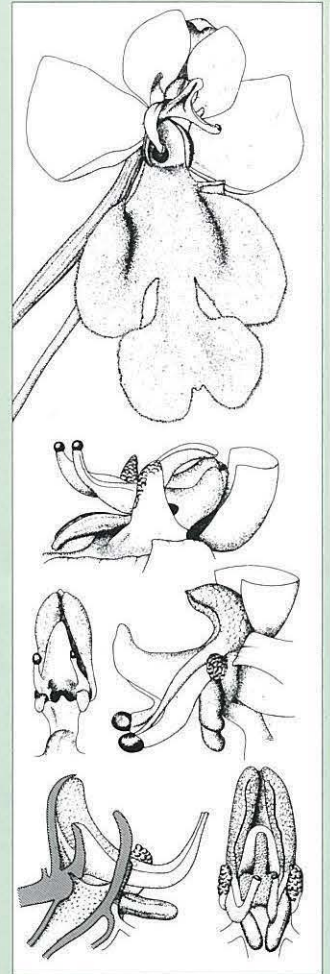
This new work should take pride of place next to Holttum's original publication as an essential reference for all who are interested in the orchids of South East Asia. While bringing up to date a classic resource, the authors of *The Orchids of Peninsular Malaysia and Singapore* have retained the virtues that made the original work a landmark publication.

I was able to verify the usefulness of the text when I brought my copy with me to Fraser's Hill in Malaysia. The well-produced volume quickly became an

indispensable reference as we studied the orchid flora under siege on the Hill. Exhaustive as this current revision is, however, it became evident that continued study of the orchid flora of Malaysia would yield enough new records to warrant yet another edition. In the meantime, and for quite some time to come, this new work by Seidenfaden and Wood will remain the definitive reference for orchids of our region.

Tan Wee Kiat
Executive Director

THE ORCHIDS OF PENINSULAR MALAYSIA AND SINGAPORE, A Revision of R.E. HOLTUM: ORCHIDS OF MALAYA by Gunnar Seidenfaden and Jeffrey J. Wood, 1992 Olsen & Olsen, (published in association with The Royal Botanic Gardens, Kew & The Singapore Botanic Gardens) Helstedsvej 10, DK-3480 Fredensborg, Denmark. 884 pages, colour photographs, line drawings, coloured map. Price £\$64.00 + postage. Telephone/fax + 45 42 28 13 93.



(*V. Nam Kee* x *V. Singapore*); *V. Marlie Dolera* (*V. Petamboeran* x *V. sanderiana*); *Renantanda Jane McNeill* (*V. B.P. Mok* x *Renanthera storiei*) and *V. Sanada Kuma* (*V. B.P. Mok* x *V. Bill Sutton*).

One very interesting 4th generation hybrid is *V. Rubella* (*V. Ruby* x *V. Prolific*). This semi-terete hybrid is easily identified by its characteristic broad, showy lip.

Among the 31 fifth generation hybrids, *V. Bellasan* (*V. Rubella* x *V. sanderiana*) is the best known. It is a semi-terete vanda, very free flowering and well grown in pots and in ground under full sun.

A new hybrid has recently been named to commemorate the 100th birthday of *Vanda Miss Joaquim*. The hybrid is a result of a cross between *V. Miss Joaquim* and *V. Josephine van Brero*. The hybrid lives up to the standard of both the parents as a free flowering and colourful orchid, most suitable for use as a landscaping plant.

Besides being an important parent in the early days of hybridisation, *V. Miss Joaquim* is remembered for the significant role it played in the history of orchidology. This was the first plant to make the orchids of Singapore known to the world. *V. Miss Joaquim* was the plant that catalysed the development of the orchid cut flower industry in Hawaii. Furthermore, inspired by the ever-blooming quality of this hybrid, Holttum began the orchid hybridisation programme in the Singapore Botanic Gardens.

Even though most of the hybrids produced in the same period as *V. Miss Joaquim* are long gone, this hybrid still grows with pride and vigour under the admiring gaze of thousands of visitors coming daily to Singapore. Happy 100th birthday, *Vanda Miss Joaquim*!

Yam Tim Wing
Research Officer, Orchidology

JAMES BEARD SPEAKS ON TURF MANAGEMENT



Dr Beard addresses a capacity crowd at Fort Canning Centre Gallery.

Renowned turfgrass specialist, Dr James Beard, spoke to a full house at Fort Canning Gallery on 29 April 1993. The audience comprising staff from Ministry of National Development departments and statutory boards, faculty and students of tertiary institutions, and private landscaping companies had come to hear the American authority on the management of amenity and sports turf.

Dr Beard is the President and Chief Scientist of The International Sports Turf Institute, Inc., USA. He is a noted authority in the field of turf management and a pioneer in turfgrass science, having added some 98 scientific papers, 204 technical progress reports, and 343 popular articles to the literature on the subject. He has also written six books and co-authored one book on turfgrass science and management.

Recipient of many awards, Dr Beard has served as technical advisor to turfgrass associations in several countries and was the first president of the International Turfgrass Society (ITS) founded in 1969 and is still actively involved in the organisation.

His lecture encompassed the full range of topics from turf fertilization, irrigation and drainage, to pest and disease identification and control. Dr Beard said that there is a great need to develop turfgrass cultivars and allied cultural systems requiring minimal water, fertilizer, pesticide and energy inputs. He recommended a more controlled fertilizer usage with lower nitrogen and higher potassium levels and an increase in the use of slow release carriers. Foliar feeding is encouraged in environmentally sensitive areas, he said. He also advised that iron be incorporated in the fertilizer programme for rooting and that the fertilization timing be based on tissue analysis.

With regard to irrigation and drainage, Dr Beard said that the current trend in irrigation systems relies on the use of low pressure sprinkler heads, computer interactive controls, modified pressure formula programmes based on net radiation, and other environmental parameters.

Whether or not pesticides used in turf maintenance are responsible for polluting the environment remains debatable, according to Dr Beard. Nevertheless,

several guidelines have been formulated on the use of pesticides on turf. Some of the recommendations include selection of pesticides with a rapid degradation rate and low solubility in water, and use of pesticides only when absolutely necessary.

Dr Beard pointed out that some of the most common turf problems encountered on sports fields are compaction, divoting and bald patches. Such problems are non issues if the ground is prepared properly initially. According to the method of sports field construction recommended by the Texas branch of USGA (U. S. Golf Association), the soil profile should be comprised of 12 inches of root-zone mix in the uppermost layer followed by 2 inches of coarse sand, 4 inches of gravel with subsoil forming the bottom most layer. Adequate drainage should be provided.

The root-zone mix should have pH ranging between 5.5 - 6.5 and conductivity not exceeding 4 mmho/cm. The coarse sand particles have two key functions. Firstly, coarse sand prevents the migration of fine sand particles from the root zone mix into interstices in the gravel layer. Secondly, it creates a perched water table immediately above the lower portion thereby serving to retain water in the root zone mix. Washed and screened pea gravel of diameter 6 to 10 mm encourages the rapid lateral movement of gravitational water to drain lines while preventing the capillary rise of salts from the soil base into the root zone. For subsurface drainage, the herringbone or gridiron design can be used. A vertical barrier using polythene sheets should be installed at the boundary between the original soil and the newly-laid root zone mix. This is necessary to prevent turf at the perimeter from water stress.

As a solution to overcoming compaction, divoting and bald patches, Dr Beard introduced the innovative mesh elements. These are 50 x 100 mm polypropylene grids. When incorporated into sand, the interlocking mesh elements reduce turf divoting and tear through better root anchorage, stabilise the sand root zone-turf system, decrease surface hardness, increase traction as well as improve surface uniformity. The overall benefits include improved playability and greater use capacity.

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On 14 May 1993, the National Parks Board (NParks) signed two Memoranda of Understanding (MOUs) in research collaboration with two tertiary institutions; one with the National University of Singapore (NUS) and the other with the National Institute of Education (NIE), Nanyang Technological University.

Representing the organisations at the signing ceremony held at the Nature Reserves Visitor Centre were NParks' Executive Director, Dr Tan Wee Kiat, Professor Bernard Tan, Dean of Science, NUS, and Professor Leo Tan Wee Hin, Dean of the School of Science, NIE. Other guests witnessing the ceremony included friends and staff from all three organisations.

The signing of the MOUs formalises the long-standing research cooperation between NParks, NUS and NIE, and eases the way for further collaboration in horticultural, botanical and ecological research for the three institutions.

One of the projects that is currently under collaboration between NParks, NUS and NIE with the help of the Nature Society (Singapore) is the Nature Reserves Survey — a six-year project to collect a comprehensive pool of information about the unique plant and animal life and physical features of the Bukit Timah and Central Catchment Nature Reserves.

Another project by NParks and NUS staff is to determine cost-effective methods of restoring degraded land in the Nature Reserves into a species-rich primary forest state. NParks and NUS staff are also conducting research on the biodiversity of the four-hectare rainforest fragment at Singapore Botanic Gardens.

NParks and NIE staff, in conjunction with the Smithsonian Institute of Research, are also studying the forest dynamics of Bukit Timah Nature Reserve. Their aim is to conduct a long-term monitoring programme on the flora, fauna and the forest environment of our last remaining primary forest.

These projects will assist NParks in developing a masterplan for better management of the Nature Reserves.

Lim Kar Yee
Public Affairs Officer

NPARKS SIGNS MOUS with NIE and NUS

NPARKS IS SCIENTIFIC AUTHORITY ON NATURE CONSERVATION

NParks has been appointed government's Scientific Authority on Nature Conservation to represent Singapore's interests under the Convention of Biological Diversity. In this role, NParks will represent Singapore at international conservation forums and implement programmes to preserve and enhance Singapore's biological diversity. NParks will continue to provide scientific advice to Government and monitor and coordinate measures required to maintain the integrity of Singapore's designated nature areas under the Green Plan. This role also entails preparing inventories of biological diversity in nature areas and promoting nature awareness.



A forest giant, *Adenanthera bicolor*, being measured.

Above, remote areas can be accessed via boats provided by the Public Utilities Board.

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In his closing remarks, Dr Beard dwelt on the future trends in turf management. He said that the year 2000 will witness major increase in computer utilization, an increase in the use of integrated pest management approaches and a reduction in the use of pesticides. There will be continued emphasis on water conservation and a more controlled fertilizer usage. Energy will be more efficiently utilized while turfgrass cultivars with improved stress tolerance will be produced. A more innovative root zone

medium would be made available for highly trafficked turf. Lastly, greater importance will be placed on employee safety and education in continuing technical advances, he said.

Questions from the audience kept Dr Beard speaking well beyond his hour-long lecture, and those who came to hear a detailed, in-depth review of modern turf management were not disappointed.

Nashita Mustafa and Ng-Yang Cheng Noi
Research Officers, Soil Science

Branching Out: Gardening in Miniature



A desert dish garden.
Above, an English landscape in miniature.

The first miniature garden, which was said to cause quite a stir at the London Chelsea Flower Show in 1923, was created using an old sink. When old sinks ran out, horse troughs, birdbaths and other concrete troughs and dishes were used. These sink or trough gardens raised on pedestals will appeal to many a gardener. Being ergonomically designed, they are a boon to the handicapped or elderly gardener who can enjoy gardening without having to squat or bend.

Whether or not you possess an old sink, you can try creating your own miniature garden — a temperate countryside scene, a forest, or a desert. Here is how.

Materials

1. a container at least 8 cm deep, large enough to accommodate groups of miniature plants;
2. sterilised soil or burnt earth mixed with peat in equal proportions;
3. granite for use as footpaths;
4. moss to simulate grasslands;
5. small pebbles for stepping stones;
6. large pebbles for hills;
7. satay sticks, toothpicks or balsa wood for fences and houses;
8. miniature plants;
9. clay, porcelain or glass replicas of houses, bridges, people, and other miniature figures;
10. gardening tools.



Right, a countryside scene complete with cottages made from balsa wood and broom brushes.

SUGGESTED PLANTS FOR MINIATURE GARDENS

Temperate countryside

1. *Juniperus chinensis* (Juniper) rooted cuttings
2. *Serissa foetida*
3. *Thuja orientalis* rooted cuttings
4. Mosses

Oriental landscape

1. *Bambusa glaucescens* (Hedge bamboo)
2. *Asparagus densiflorus* cv Sprengeri
3. *Asparagus plumosus* (Fern asparagus)
4. *Pilea microphylla*
5. *Malpighia coccigera* (Singapore holly)
6. *Alternanthera amoena*
7. *Polyscias guilfoylei* (Celery-leaf panax)
8. Mosses

Desert

1. *Opuntia microdasys* (Prickly pear)
2. *Aloe spp.* (Dwarf Aloe)
3. *Lithops bella* (Pretty stoneface)
4. *Fenestraria rhopalophylla* (Baby toes)
5. *Frithia pulchra* (Purple baby toes)
6. *Sedum pachyphyllum* (Jelly beans)
7. *Echinocactus grusonii* (Golden barrel)
8. *Astrophytum myriostigma* (Bishop's cap)
9. *Echeveria spp.*
10. *Crassula spp.*

Preparations

Plan your garden first. Visualise the garden with help from calendars, old postcards and photographs of landscapes. Draw out the concept on a piece of paper, indicating the positions of the plants, footpaths, rocks, etc. Visit a plant nursery and look out for plants with dwarf habits and miniature leaves. Check the light condition required for them, and select only plants suitable for the location where the garden is to be placed.

Planting

Fill the trough with soil mix. Grade the soil to form hills and valleys. Mark out the areas for roads and water bodies leaving spaces for trees, shrubs and lawns. Place the plants in the spaces provided. Finally arrange other accessories like toy houses, people, etc. When you are sure about the



An oriental mountainside landscape.

positioning of the plants, remove them from the pots and plant them in the trough.

Care and Maintenance

Place the miniature garden where there is sufficient light. For ferns and other shade-loving plants, a shaded and moist location is preferred. The balcony and patio are excellent places. Make sure the plants receive some sun in the morning or evening. Water the plants daily and apply fertilisers once a month using a compound, liquid or organic fertiliser.

Prune and keep the plants in shape. Remove or thin overgrown or unhealthy plants. You may need to propagate new plants for replacement. Bare patches can be filled with mosses or coloured chips. Houses and fences would need repairing.

With proper care and some imaginative touches, your miniature garden will give you many hours of gardening pleasure.

HAPPY GARDENING!

Jennifer Ng
Assistant Director/Education

Two NParks' Board Members were honoured with National Day awards during this year's celebrations. Prof Gloria Lim received the Public Service Star for her contribution to the Public Service Commission. Eminent mycologist and plant pathologist, former Dean of the Science Faculty and Head of the Botany Department, NUS, she is currently Director of the National Institute of Education, Nanyang Technological University. Prof Lim has been serving on the Public Service Commission for the past 10 years. The Commission recruits candidates for public service and encourages their development through promotions, scholarships and bursaries.



APPLAUSE ALL 'ROUND

Our National Day Award Winners

Prof Bernard Tan Tiong Gie received the Public Administration Silver Medal. Beginning in 1968 Prof Tan has served on the faculty of NUS and has been their Dean of Science since 1985. The Silver Medal is his third National Day Award, which with characteristic modesty he attributes to his fellow faculty members in the School of Science.



NParks' honoured Board Members, Prof Bernard Tan and above, Prof Gloria Lim.

years she worked for a biotechnology firm developing tissue culture protocols for commercially important plants. She was also actively involved in establishing Jurong BirdPark as a plant collection centre for heliconias and related families. Jacintha sees the Botanic Gardens as an extension of the classroom and looks forward to creating more interactive public education programmes.

NParks' Nature Reserves team has grown by leaps and bounds recently with the addition of Research Officer Miss Chew Ping Ting, Research Assistant Mdm Sharon Chan and Assistant Research Officer Miss Wendy Kan. Ping Ting received an honours degree in Biology from NUS, with a paper on the semi-parasitic Mistletoes. She came to the Board to join Nature Reserves Manager Robert Teo's team. Concentrating on the Nature Reserves Survey, she says that, even in the first year, some tree species that have not been recorded for Singapore before may have been discovered. Final determination will necessitate collection of fruits and flowers. The survey, will move on to birds, reptiles, insects, stream life, etc.

Sharon was in the last graduating class of the University of Singapore before it became NUS and has an honours degree in Zoology. She was Curator of Birds at

SPOTLIGHT ON NEW STAFF

The last few months have been rather exciting for our growing family. New staff have filled both vacant and new posts in Nature Reserves, Research, Corporate Services, Technical and Logistical Services, and Planning and Development, and we would like to welcome them all. At press time the following staff had joined us. Others not included here have joined since, and we also welcome them and say, "If you escaped the mad interviewer this time—we'll get you next time!"

Mrs Jacintha Ramachandran assists Assistant Director/ Education Mrs Jennifer Ng in developing and implementing public education programmes. She also teaches Plant Physiology and Plant Anatomy to Diploma students and various gardening courses for gardening enthusiasts. Jacintha graduated from the National University of Singapore (NUS) with an honours paper on the "Tissue culture of *Brassica napus*" and wrote her Master's thesis on "In vitro studies on *Heliconia*". For five

Jurong BirdPark for eight years and recollects helping the first kiwi bird hatch. The careful process takes several days, she says, as the hatchling learns to breathe air and gathers enough strength to face the outside world. Sharon attended a Wildlife Management course conducted by the Smithsonian Institute and Department of Wildlife, Malaysia in 1988. She is excited about her duties that will include collating field data for the five-year Nature Reserves Survey.

Wendy was finally tracked down in the Library studying the 64 plots that make up the areas for the biological phase of the Nature Reserves Survey. She graduated from the National Institute of Education (NIE), and proceeded to teach English, maths and science which she says she may go back to sometime, with the new ability to relate personal experiences gained at NParks. A night-long faunal survey awaits Wendy in the near future, which will not be a camping trip, but hard work alongside her Nature Reserves Division colleagues. Though she

says she is just an amateur, if you play squash and badminton and love spicy food (and tramping about in the forest), you'll get along well with Wendy.

Our Finance team also grew, and is now headed by Financial Controller **Mrs Kuo Geok Yu**, who earned a degree in accountancy from NUS before signing on with Inland Revenue (Income Tax Department). An Architectural consultancy was fortunate enough to have Mrs Kuo join them after that for several years, and now we at NParks receive her valued advice and services. Two girls, ages 8 and 14, keep her busy with frequent outings, usually family hikes (Bukit Timah Nature Reserves is a favourite), and time off sees the family travelling to out-of-the-way places to enjoy natural settings and more hiking.

Another TLS (Tender Loving Service?) staff member is Assistant Manager **Mr Ong Hong Leong**, who holds a Diploma in Building and came to us from DBS Property Services. Ong is married with one boy (just turned one year old) and a girl of three and a half. Living in Ponggol, where he plays basketball at the Community Centre, has its good and bad points: great seafood and an hour and a half to commute to work!

Store Officer **Mr Goh Sin Kok** did his National Service as a store man, dealing with a huge inventory of tools. He was at MOE for a bit and then came to join us at NParks. He's a bachelor who enjoys listening to Andy Lau and Madonna when he has free time. Maybe we have a new candidate for our next Karaoke session?

The Gardens' 600,000+ specimens in the Herbarium have a new friend! **Dr Chin See Chung**, fresh from the Perth Herbarium, has brought his specialty to NParks as Keeper of the Herbarium.

Bachelor's from U of Singapore, Master's from U of Malaya, and PhD from Yale—university degrees in botany and forestry were somehow intertwined with teaching at the University of Malaya. He remembers good student housing and great parties at Yale, where he first developed a taste for hamburgers, but he really prefers his home cooking. We already know him as a man who speaks his mind, is fanatical about the preservation of our Library and Herbarium resources, and one who combines self-confidence with a friendly energy that has enlivened many a staff meeting.

The Planning and Development Division has also had an infusion of energy with the addition of **Ms Rohaya**

Mustapha. An NUS degree in Architecture, a flair for colour and costume design (Rohaya won the best dressed award at the 60's theme staff party), and a laugh that survived 7 years in public works identify Rohaya. She has little boys (two and four) and a six-year-old daughter. Goals are to broaden her experiences, learn from her Landscape Architect co-workers, and to create a recreational plan for Hindhede Quarry. Rohaya concentrates on Fort Canning Park and the Nature Reserves, but sometimes secretly (don't tell) she wishes she was 21 again, backpacking throughout Europe.

The Entomology Department is happy to have **Ms Chin Chiew Foan** join as its Research Officer. Chiew Foan compiled a well-rounded research background after graduating from the U of Lincoln (NZ), with projects in biotechnology at NUS and biological control of grass grubs at the Ministry of Agriculture and Fisheries in



New Zealand. She will join Mrs Choo in research projects and assist in the Nature Reserves Survey.

With such a diversity of specialties in the NParks' Divisions, the Establishment Committee has a tough job screening

Many of the people who work for NParks are and have been involved in civic activities—Scouts, National Youth Achievement, various community service and volunteer activities. Prof Richard Eric Holttum, Director of Botanic Gardens from 1925 to 1949, was the president of the Rotary Club of Singapore from 1939 to 1941 and District Governor of Rotary District 330 (Singapore, Malaysia and Brunei) in 1941-2 and 1948-9. We are pleased to announce that the Board of the Rotary Club of Singapore just elected **Peyton Coffin** as Rotarian of the Year, '93.

applicants. Who is best qualified, really interested in the job and will be most effective? And as you can see, these colleagues are also interesting people—each from different backgrounds and disciplines, and each willing to join in and work with our team. Again, Welcome!

Peyton Coffin
Assistant Director
/Marketing

Above, New staff members from l to r, Jacintha, Ong, Ping Ting, Sharon, Chiew Foan, and Wendy.

Above top, at the kapok tree, from r, Goh and Dr Chin, seated from r, Rohaya and Mrs Kuo



East Shore Hospital Trains NParks Staff in First Aid Awareness

For eight days in March the School of Horticulture was transformed into a First Aid Station. East Shore's Community Education co-ordinator, Ms Judith Wong-Leong, tutored our staff in first aid treatment as part of the Hospital's community education programme.

46 NParks staff, including Rangers, Horticulturists, Admin personnel and

Researchers, attended the course and received certificates in Basic First Aid. In the course especially designed for NParks' needs, we learned the basics of rendering first aid to our visitors or fellow staff members should they fall prey to insect bites, injuries due to falls, heat exhaustion, plant poisoning, etc. We learned first aid for wounds, foreign bodies, such as thorns and splinters, and Cardio-Pulmonary Resuscitation.

NME Singapore, which manages East Shore Hospital and Mount Elizabeth Hospital, also donated custom-made First Aid Boxes for Botanic Gardens, Bukit Timah Nature Reserve and Fort Canning Park, as well as four "grab-and-go" kits to take to the scene of an emergency.

Our warmest thanks go to Judy for the time she took with us and to East Shore Hospital for our new, fully equipped First Aid kits.

Peyton Coffin
Assistant Director/Marketing

NParks Wins Soccer Tourney

NParks' team emerged this year's champions from the "7-A-Side Soccer Tournament '93", organised by the Parks and Recreation Department's Social and Recreation Committee and held at the Civil Service Club Football Field, Dempsey Road.

NParks receives an invitation to this event every year. This year we came "fully" prepared to do better than last year. This year we weren't going to be

showing championship material.

The third game was a different story altogether, as we met a more formidable opponent in the defending champion with whom we drew nil-nil.

In the semi-finals with West Club we were unlucky not to have scored. The final scoreline read 0-0. There was no extra time at the end of the game, but during the tie-break penalty kicks showdown, Lee and Saparuan managed to score. We could have lost if not for the brilliance of our custodian, the man in goal, Sidek, saving a penalty.

The final was a foregone conclusion, as we knew by then there was no way we could be beaten. We won 2-1 with a few near misses. With that scoreline, I have for you the list of heroes who have done what no other BG or NParks team has done before: Rahmat Abdan, Nadesan Nagarajah, Said Zailani, Saparuan Sabit, Ahmad Shukor, Lee Yuen Nam (top scorer), Salim A. Karim, Sidek, and Ismail. Thanks to them we captured the championship.

Naturally everybody was very happy to have won after all these years. Despite age, it goes to show that a little fighting spirit is what matters.

Rehan Yusoff
Management Officer, Nature Reserves



NParks' winning team, back row from l, Rehan, Raja, Rahmat, Ismail, Sidek, Salim, Mohd Mael, Lee; front row from l, Saparuan, Ahmad Shuker, Said. **Above**, Wilson Chua (behind) rendering "first aid" to Alan Tan and Marziah Bte Omar.

whacked...no way babe! This is how it went.

The eight participating teams were divided into 2 groups. In group A we met Transnorth and knocked the daylights out of them by scoring 3 goals. In our second game we hammered South Branch, 2 nil. At 2 nil up, everybody was talking about NParks being the team to beat and

The next time you are at Fort Canning Park do take a stroll along the newly completed 19th-Century Walk of History. One of two walks of history planned for the park (the other being the 14th-Century Walk), the Walk links together relics of the 19th century such as the remains of the old fort and the first Christian cemetery in Singapore. Based on a fort theme, the Walk includes interpretive elements along the way to make it easy for the visitor to appreciate history in an outdoor and informal setting.

Start your walk at the Dobbie Rise roundabout, near where two small, early-20th-century switch houses still stand. Here a plaque on the parapet wall of the new footpath introduces you to 19th-century Fort Canning. To set your imagination rolling, try to picture the beautiful view from Raffles' Bungalow atop Government Hill, the town below bustling with horses and carriages, and ladies in flounced skirts and parasols strolling on the grounds of the first botanic gardens.

About one hundred metres or so ahead, just before the sharp bend at Dobbie Rise, a second plaque tells you about the fort wall which once ran completely around the summit of Fort Canning, protecting it against possible enemy artillery bombardment. The remains of this strong wall run alongside the footpath, its age emphasized by the dense network of roots from the majestic fig tree nearby.

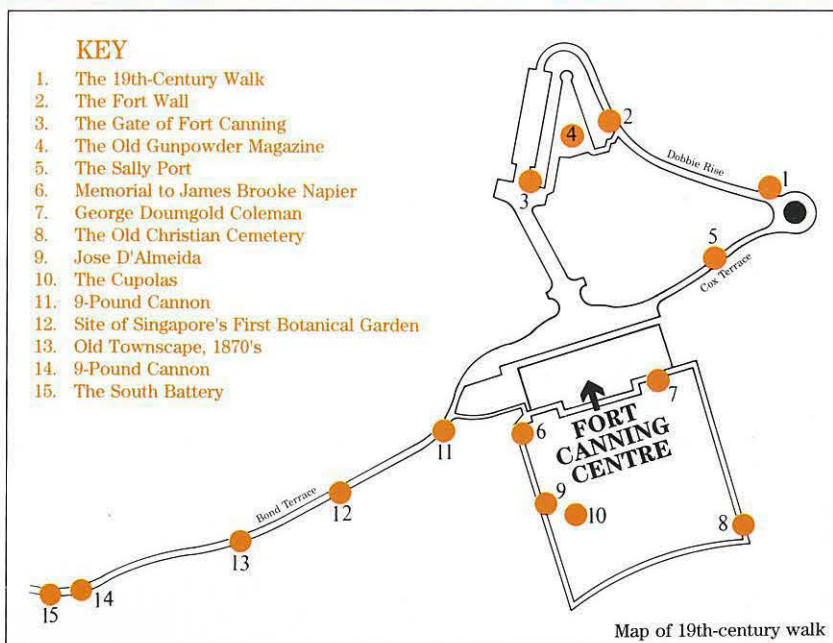
Passing the bend at Dobbie Rise, you will come face to face with the gate of Fort Canning, a must-see landmark at the Park. Through a small entryway hidden behind one of the massive wooden doors, you will find a narrow stairway with a low ribbed ceiling. Through this stairway, you can climb to the top of the structure. The pleasure is more in the "secret" passageway, however, than in the top-of-gate view!

As a matter of interest, some 400 Chinese coolies were mobilised in the construction of Fort Canning which was named after Lord Charles John Canning, the Governor General of India. Completed in 1861, it had an oval shaped block, the "Artillery Barracks", then the largest building within the fort. There were also a hospital and two gun-powder magazines. The old hospital occupied an area of the hill near Fort Canning Centre. One of the gun-powder magazines was sited on the left of the old fort gate and the other magazine was located where the Keramat (Iskander) stands today.

A new plaza area has been constructed at the site of the first gun-powder magazine for the benefit of park strollers and the occasional outdoor performance. There is a neat row of stone benches where you can sit and enjoy the quiet surroundings.

From the old Fort Gate, a grand staircase now leads down to the front of Fort Canning Centre, formerly a soldiers' barracks dating back to 1926. If you walk down the staircase, turning right and

TAKE A 19TH-CENTURY WALK AT FORT CANNING PARK



The new footpath paved in granite leading from the car park uphill to the Fort Gate.

heading in the direction of the Black Box theatre, you will come to the first of two newly constructed gun emplacements. The cannon mounted at the emplacement

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is one of a pair which for many years were used as decorations for the main gate of Fort Canning. It is of an earlier period and smaller than the 68-pounders which once graced the upper slopes of the fort.

Before the walkway turns into Bond Terrace you will be somewhere in the midst of the first botanical garden which was the brainchild of Nathaniel Wallich, a Dane who became superintendent of the Royal Gardens at Calcutta in 1815. The garden ran from here to Mount Sophia, covering 20 hectares. No trace of the garden remains today except for one or two squirrels scuttling among the fern-covered trees nearby — probably descendents of the animal population then.

The Bond Terrace stretch of the 19th-Century Walk is a good spot for an evening stroll with the family. The wide granite footpath and the solid parapet wall echos the fort theme of the Walk. Old-style lampposts and overhanging



Plaques along the walk give visitors essential information about the historical features of the Park. Right, one of the restored original cannons on recreated timber supports.

branches of giant trees complete the setting for a scenic walk. This stretch of the 19th-Century Walk ends at a second gun emplacement near the present Telecom tower.

A plaque near the second gun emplacement describes the South Battery, the main battery of guns at Fort Canning which defended Singapore in the 19th century. Standing here, you can get a good view of the city with the dome of the Supreme Court in sight and a glimpse of the sea beyond. You are also very close to the site of Raffles' hilltop bungalow (situated somewhere near the present look-out point) which was built on his third visit to Singapore in 1823. In a letter to the Duchess of Somerset, Raffles spoke of the "unequalled beauty and interest of the scene" from his bungalow which he said was sufficiently large to accommodate his sister's family as well as his own.

The 19th-Century Walk at Bond Terrace ends just before the Telecom tower. To continue with the rest of the Walk you need to head back towards Fort Canning Centre turning right just after the first gun emplacement and walking down the steps fronting the patio to Fort Canning Green, formerly the site of the first Christian cemetery in Singapore.

You can explore the tombstones of early settlers along two walls at the Green or pose for pictures in front of the two interesting cupolas beside a huge fig tree. The oldest tombstone here, dating back to 1821 is that of John C Collingwood of the ship "Susan". Here you can also find a plaque commemorating George Doumgold Coleman, Raffles' consultant on the first town plan and the superintendent of public works from 1833. Coleman was once buried in this quarter of Fort Canning hill. The largest relic at the Green is the huge monument to the infant son of William Napier, Singapore's first law agent. The boy died at sea at the age



of five months and twenty-four days on board the HMS "Meander".

To see the last item of interest along the 19th-Century Walk you need to go up the steps to the patio at Fort Canning Centre. Walk along the patio on the right hand side of the building and up again at the corner to Cox Terrace. Just past the entrance to the World War II underground bunkers you will see the "Sally Port". A part of the former fort wall, this is a small door on the slope of the hill meant to help defenders enter or exit the fort undetected. Fort Canning had at least three of these sally ports in the past. On your way to the car park, remember to look out for this interesting relic!

Koh Poo Kiong
Manager, Fort Canning Park

CONTEST TO NAME THE NEW ORCHID GARDEN SINGAPORE BOTANIC GARDENS

The National Parks Board is pleased to invite Singapore citizens and permanent residents to name the new Orchid Garden presently under construction at Singapore Botanic Gardens. This exciting new garden feature will be completed by the end of 1994. The Board is seeking a name that will reflect the distinctiveness and importance to Singapore of this prime visitor attraction—the most extensive and comprehensive permanent exposition of orchid culture in Asia.

HIGHLIGHTS OF THE ORCHID GARDEN

A year-round panorama of colour and beauty will await the visitor to the new Orchid Garden. Poised on the western slope of Singapore Botanic Gardens overlooking Palm Valley and crowned by the restored 1866 Director's bungalow, the Garden will offer three terraced hectares of orchid blooms.

The completion of the new Orchid Garden will mark a major visitor attraction for Singapore and a place of honour among the world's specialty gardens. This "exhibition of orchids in a garden setting" will draw on the Botanic Gardens' long-standing, pioneer tradition of orchid conservation and orchid breeding in creating a very special recreational experience for our visitors.

Orchid display and cultivation have been important components of Singapore Botanic Gardens over the last century. All of these accumulated botanical and horticultural resources are being brought to bear on the design and development of the new Orchid Garden.

THE NEW ORCHID GARDEN DESIGN

The garden will be located on a series of terraces overlooking Palm Valley and Symphony Lake. It will measure approximately three hectares, as compared with less than one hectare of display at the existing Orchid Enclosure, now receiving over 3,000 visitors on weekdays and over 1.5 million per year. The new orchid garden will allow for three times the current number of orchid plants on display, or over 50,000.

The garden design and landscaping will give prominence to the wide variety and colours of orchids grown in Singapore. The garden will provide a showcase for orchids produced by Singapore's export

orchid industry, as well as the products of the Botanic Gardens' orchid breeding programme, ongoing since 1928.

The display concept will utilise interesting planting patterns, special techniques and unusual creations showing the versatility of the orchid. Orchids will be arranged in grand profusion or special ornamental displays such as orchid walls, arches, carpets, baskets, etc. The organising principle will be a "seasonal display" in which orchids will be grouped in a colour procession from the warmth of springtime through the cool tones of winter.

The garden design will also attend to the needs of visitors to rest, find gathering spots and refreshment, and take photographs along the way.

The display will be divided into 3 main areas:

- 1) On the orchid terraces, visitors will see waves of orchids intermingled with other complimentary tropical plants, shrubs and shade trees in a 4-seasonal colour theme. Fountains and other water features will be part of the terrace display.
- 2) In the shadehouses, visitors will see special displays of rare and cool-climate orchids, along with theme displays of potted and cut orchids from the region's orchid-growing countries.



Vanda Mevrouw L. Velthuis Snowcap (V. Miss Joaquim x V. *sanderiana*).

Below, *Vanda Madame Dinger* (V. Miss Joaquim x V. *tricolour*).

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- 3) The orchidarium will show a re-creation of the natural orchid habitats of tropical rainforests. Here the region's rare and indigenous orchids will be planted in natural settings.

Burkill Hall, the restored Director's House built in 1866, will function as the VIP reception hall for state visitors. The main hall will hold exhibits featuring Singapore's contribution to the world's orchid industry, as well as the orchid breeding and conservation programme of the Botanic Gardens.

CALL FOR ENTRIES

- * You are invited to submit a name for the new Orchid Garden to the National Parks Board on the attached entry form.
- * A short write-up of not more than 100 words describing the relevance of your chosen name should accompany the entry.

PRIZES TO BE AWARDED

- * Grand prize : \$3,000
- * Second prize : \$1,000
- * Third prize (2) : \$ 500 each
- * Winners and finalists will receive specially designed trophies and medallions crafted by Royal Selangor Pewter.

RULES OF THE COMPETITION

- 1. The competition is open to all Singapore citizens and permanent residents, except employees of the National Parks Board and the sponsoring organisations.

- 2. All entries must be on the official entry form (photostat copy acceptable), enclosed in a sealed envelope marked "NAME THE ORCHID GARDEN COMPETITION", and sent to the Executive Director, National Parks Board, Singapore Botanic Gardens, Cluny Road, Singapore 1025 by 5:00 pm on 31st December 1993. Late entries will not be considered.
- 3. Each contestant may submit only one entry and the entry form must be complete.
- 4. A contestant may win only one prize.
- 5. Entries will be judged by a panel of judges appointed by the Board. The decision of the judges will be final. No correspondence will be entertained, and the Board will not be responsible for entries reported lost.
- 6. Should there be identical winning entries, the winner will be drawn by ballot and the prize money awarded accordingly.
- 7. The Board reserves the right not to award any of the advertised prizes should entries fail in the judges' sole opinion to meet the required standard.
- 8. All entries will become the property of the Board.

THE WINNING RESULTS

The Board will notify the winners by post, and a press release issued by end of January will announce the results of the competition.



Above, *Vanda Prolific*, a descendant of *Vanda Miss Joaquim*.

<p>Entry Form NAME THE NEW ORCHID GARDEN</p> <p>Please complete the form by typing or writing legibly:</p> <p>Name: Mr/Mrs/Ms/Dr _____</p> <p>NRIC No: _____ Age: _____</p> <p>Address: _____</p> <p>Contact Nos: _____</p> <p>Occupation: _____</p> <p>Organisation/Institution: _____</p> <p>Signature: _____ Date: _____</p>	<p>NAME OF THE NEW ORCHID GARDEN:</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Statement — Why this is an appropriate name for the new orchid garden: (Statement may be attached on a separate sheet.)</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Send to NAME THE ORCHID GARDEN CONTEST, c/o Executive Director, National Parks Board, Singapore Botanic Gardens, Cluny Road, Singapore 1025. Closing date is 31st December 1993.</p>
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