

# Dr Lilian Fraser

## WOMAN DOCTOR OF SCIENCE

### Studies Obscure Fungus

**T**HE first woman in the past five years to gain the degree of Doctor of Science in New South Wales is Dr. Lilian Ross Fraser, who, after a brilliant academic career at Sydney University, will leave in August for London to continue her studies for a year at the Imperial College of Science.

Dr. Fraser, the first woman botanist to gain this coveted honor, is one of three women in this State who have gained the D.Sc. degree, the others being Dr. Ida Brown, a lec-



Dr. Lilian Ross Fraser

turer in geology at the University, and Dr. Claire Weeks, a zoologist, who recently returned from abroad.

Dr. Fraser, who is the daughter of Mr. and Mrs. C. Fraser, of Pennant Hills, left the Sydney Girls' High School in 1925, having gained a public exhibition in the faculty of science. After graduating in 1930 with first-class honors in botany, she proceeded, two years later, to the Master of Science degree.

In 1932 this brilliant student was granted a Linnean-Macleay Fellowship for Research, which carries with it an annual allowance of £400.

Dr. Fraser's chief scientific interest is in an obscure fungus which grows on the bark of trees. During the time she has been engaged in research on this mould, she has travelled 50,000 miles in her own car through New South Wales.

"Of course, I know New South Wales fairly well," said Dr. Fraser, who added that on occasions her work had taken her as far north as Queensland, and once she had travelled to South Australia in search of material for articles which the Linnean Society had published.

"If one does science intensely there is very little time left for hobbies," remarked Dr. Fraser, who makes some claim to be an amateur photographer. "Of course, most of my shots have been botanical specimens," she added.

For the second time in its history the Linnean Society of NSW has given its highest honor to a woman. Dr. Lilian Fraser, plant pathologist of the NSW Department of Agriculture, has recently been elected president of the Society. Only other woman ever to hold the position is Dr. Ida Brown, lecturer in geology at Sydney University.

The Linnean Society is an old, wealthy and learned scientific body, primarily interested in geology, botany, entomology and other biological sciences with erudite members who regularly deliver papers on such subjects as: "The Utilization of Fumerate and Malate by Escherichia coli in the presence of Molecular Hydrogen."

**T**O become president of the Linnean Society one must be a scientist of pretty high calibre.

Dr. Fraser, a tall, quietly spoken woman with blue eyes, dark hair, a keen sense of humor and a scientific detachment from clothes, gossip and other interests of lesser femininity, is a scientist of very high calibre. A doctor of science of Sydney University, she has done considerable research work overseas and is the Australian authority on sooty mould fungi.



During her ten years in the Department of Agriculture, Dr. Fraser has carried out work of major importance in establishing the cause of citrus root rot and in finding, for propagation purposes, citrus stock which is resistant to root rot, one of the worst diseases with which Australian citrus growers have to contend.

Dr. Fraser's hobbies are closely allied with her work. At home she is a keen gardener and when on holidays she takes off for the bush with a botanist friend, Miss Joyce Vickery, of the



"Just sing out when

Botanic Gardens, to look for new plant specimens in remote areas.

A good bushman, Dr. Fraser was highly indignant when, some years ago, while she and Miss Vickery were botanising in a wild part of the Barrington Tops, they were described as "lost." Search parties were sent out to find them and their "discovery" made headlines.

To anyone as scientifically accurate and precise as Dr. Fraser the idea of being lost is too ridiculous. I agree. I can't imagine someone who can find her way around the intricate paths of science the way Dr. Fraser can, getting lost on a mere mountain.



▲ CITY of cold, hunger

# TOP POSITION FOR SCIENTIST

Dr. Lilian R. Fraser has been appointed senior biologist in the science services division of the Department of Agriculture at Rydalmere.

Dr. Lilian Fraser is a distinguished scientist in her own right, commented Agriculture Minister Mr. Roger Nott, when he announced the appointment.

She is a former plant pathologist in the biology branch, who has specialised in the diseases of citrus plants.

In 1940 she resigned from the Faculty of Science, University of Sydney, to join the Biology Branch of the Department of Agriculture.

She resolved the citrus root rot disease problem, which has for many years been serious both in irrigation districts and coastal citrus areas.

Virus diseases of citrus have had special attention

by Dr. Fraser, and her aim has been to ensure a supply of reliable virus-free citrus trees for growers.

Dr. Fraser's research towards clarification of the complex behaviour of citrus viruses, and their effect on different species and varieties, has attracted overseas attention.

She attended and contributed with distinction to a conference on citrus viruses in California in 1957.

In 1957 Dr. Fraser also studied in California the current research into vine diseases, and has recently worked on diseases of grapevines in N.S.W., and their control.

## Hire of the garden

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Lilian Fraser Garden can be booked for:

- Garden weddings, naming ceremonies, birthday parties and other celebrations.
- Group excursions and garden inspections for large groups.
- Professional photography and filming.
- 'The Shed' community room is also available to hire for small functions both day and night.

For more information about the availability of the garden and booking fees, please contact customer service on 9847 6666.

## Birds in the garden

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The gardens attract many birds including:

Australian magpie	noisy miner	sulphur-crested cockatoo
black-faced cuckoo-shrike	little wattlebird	variegated fairy-wren
common myna	magpie-lark (peewee)	welcome swallow
common koel	New Holland honeyeater	white-cheeked honeyeater
crested pigeon	olive-backed oriole	willie wagtail
crimson rosella	pieb currawong	white-faced heron
eastern rosella	rainbow lorikeet	eastern whipbird
eastern yellow robin	silveryeye	white-throated treecreeper
eastern spinebill	red wattlebird	
grey butcherbird	spotted pardalote	
king parrot	spotted turtle dove	
kookaburra	striated thornbill	
Lewin's honeyeater	superb fairy-wren	

## Other parks in Hornsby Shire

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For more information about other parks, gardens and reserves around Hornsby Shire visit [hornsby.nsw.gov.au/recreation](http://hornsby.nsw.gov.au/recreation) or contact 9847 6666.

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Parks and Recreation  
Hornsby Shire Council  
296 Pacific Highway, Hornsby  
PO Box 37, Hornsby NSW 1630

Telephone 9847 6853  
8.30am-5pm Monday to Friday

[hornsby.nsw.gov.au/recreation](http://hornsby.nsw.gov.au/recreation)

# your guide to Lillian Fraser Garden

Community places. Open spaces.





## Dr Lilian Fraser

Dr Lilian Fraser lived on the property for most of her life. After graduating from Sydney Girls High School, she enrolled at the University of Sydney, where she attained a Masters of Science in 1932 and a Doctorate of Science five years later.

Only the third woman to qualify as a biologist in Australia, she joined the Department of Agriculture in 1940 to work on citrus crops.

During her career, Dr Fraser made many significant contributions to world knowledge of citrus diseases, most notably Phytophthora root rot.

She travelled extensively in Australia and overseas, often returning home with interesting plants for her garden.

Over the years as the trees and shrubs have matured, the garden has evolved into a haven with a wide range of plants, some very special for their size or rarity.

There are several different magnolias and hydrangeas, a smoke bush, glorious camellias, a range of abutilons, pink and white dogwoods, a handkerchief tree, a huge metasequoia tree and a fringe tree. Many different bulbs and perennials also fill the understory.



## Introduction

The Lilian Fraser Garden is a woodland garden of 3,426 square metres, located on the corner of Bellamy and Laurence Streets, Pennant Hills.

This urban sanctuary, containing rare and unusual plants, is open during daylight hours for the enjoyment of both young and old.

## History

Lilian Fraser was born in 1908 at Kurrajong, NSW. Her family moved to Pennant Hills around 1915 when they purchased the 'Hopetoun' poultry farm in Bellamy Street.

This farm of 6 acres produced eggs for the city markets, and was surrounded by orchards stocked with citrus, apples, pears, persimmons and summer fruits.

Over the years much of the original farm was sold for residential lots, but almost an acre was kept for gardens surrounding the house.

## A garden in perpetuity

As she approached old age with no immediate family, Dr Fraser offered her garden to Hornsby Shire Council in 1982. Her final wish was for her garden to be enjoyed as a public garden and park. Dr Lilian Fraser died in 1987, aged 79.

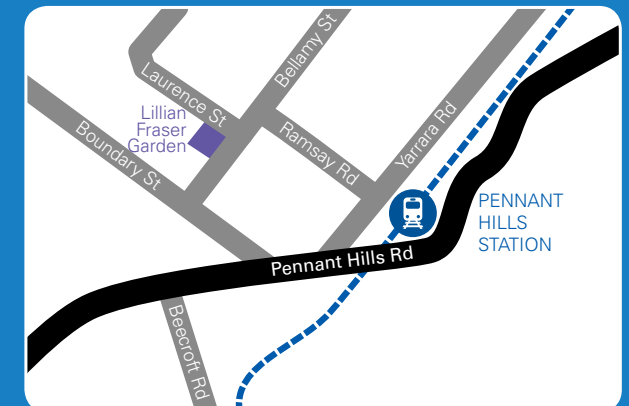
## Some seasonal highlights

**April - May**.....Autumn foliage, camellias, luculia, tree daisy.

**June**.....Camellias, azaleas, magnolias.

**September - November**.....Azaleas, dogwoods, wisteria, iris, fringe tree, crab-apples, flowering cherries.

**December - March**.....A cool shady respite from the heat.



## OBITUARY



### Lillian Ross Fraser 1909–1987

Dr Lillian Ross Fraser D.Sc., formerly citrus pathologist and Chief Biologist of the New South Wales Department of Agriculture, died on 5 October 1987 after a long illness. She was 79 years of age.

After obtaining a B.Sc. (Hons.) in Botany from the University of Sydney in 1930, Dr Fraser carried out post-graduate research from 1931 to 1937 on mycorrhizal and sooty mould fungi and on the ecology of rainforest communities in the Barrington Tops (with Dr J. Vickery). She obtained a D.Sc. (Botany) from the University of Sydney in 1937, then went to Imperial College of Science and Technology, University of London, and to the Imperial Mycological Institute to work on growth substances required for fungal growth and reproduction and fungal taxonomy. In 1939–40, she was Commonwealth Research Fellow, University of Sydney, working on fungal decay of apples in storage.

In 1940 Dr Fraser was appointed assistant plant pathologist, New South Wales Department of Agriculture. Her career was notable for her work on citrus diseases.

**1. *Phytophthora* root rot** In New South Wales, citrus under irrigation had for many years been subject to declining health, often commencing at an early age. From 1935 to 1942 almost half the citrus trees on the Murrumbidgee Irrigation Area died or became unprofitable and it was not possible to re-establish citrus on land where citrus had previously been grown. Dr Fraser showed that this was due to attack by the soil inhabiting fungus *Phytophthora citrophthora*; she tested all available citrus stock for resistance to this fungus and found the rootstock *Poncirus trifoliata* to be highly resistant. From this time this stock has been used exclusively for citrus plantings on the M.I.A. and other areas of New South Wales. Its use has enabled replanting of citrus in old, *Phytophthora*-infested land. Dr Fraser was the first in the world to recognize and describe the root rot disease of citrus caused by *Phytophthora*.

**2. Virus diseases** Dr Fraser investigated the many virus diseases which beset citrus in New South Wales, including scalybutt (exocortis), tristeza stem pitting of grapefruit, psorosis, seedling yellows, woody gall and Australian citrus dieback. The latter three diseases she named and described.

Dwarfing and scalybutt (exocortis), which affected the root rot-resistant rootstock (*Poncirus trifoliata*), was demonstrated by Dr Fraser and others to be due to infection by a 'virus', which was bud transmitted. This discovery resulted in the development of a citrus budwood certification programme in New South Wales, which ensured that only exocortis-free budwood was made available to nurserymen. The scheme was later improved to provide budwood free of all the important major citrus viruses.

Dr Fraser and other members of the New South Wales Citrus Improvement Committee scored a world first in demonstrating that the tristeza stem pitting disease of grapefruit could be controlled by the use of mild strain virus protection. Grapefruit budwood distributed from the New South Wales budwood scheme has carried a mild strain of tristeza virus.

**3. *Septoria* spot** Dr Fraser established the infection and latency periods of the *Septoria* spot disease which had become of importance in inland areas during the 1930s. As a result of her work an effective protective spray programme, which is still in general use, was developed.

For her citrus research, Dr Fraser became the first woman admitted to the Fellowship of the Australian Institute of Agricultural Science.

From 1940 to 1956, Dr Fraser carried out advisory work on diseases of ornamentals. This necessitated the identification of many diseases not previously recorded in New South Wales and formulation of control measures for them. Some of these were yellows and dry rot of gladioli, rose wilt virus and rough graft canker disease, foliar nematode and a number of virus diseases of chrysanthemums. Of particular importance was her demonstration that the root rotting fungus *Phytophthora cinnamomi* was the cause of destruction of a large number of ornamentals, trees and native plants. She recognized and preached the importance of distributing and planting horticultural stock free of this fungus.

Dr Fraser had a particular interest in viral diseases of grapevines. She established that leaf roll was a major factor in the decline of grapevines in New South Wales and introduced a programme of indexing and selecting virus-free clones. She was winner of the 'Your Garden' award of the Australian Nurseryman's Association in 1966 for her outstanding contribution to the field of horticulture.

Dr Fraser was President of the Linnean Society (1948–49, 1956–57), and a foundation member of the International Organisation of Citrus Virologists (1957). In 1960 she became Senior Biologist (the first woman appointed to an administrative position in the New South Wales Department of Agriculture) and in 1968 Chief Biologist of the Biological and Chemical Research Institute, before retiring in 1973.

Dr Fraser was a shy, quietly spoken woman with blue eyes, dark hair and a keen sense of humour. Her hobbies reflected her interest in Botany. She was a keen gardener, established a 'plantsman's garden' of rare beauty, and spent her holidays exploring bush areas for new plant specimens.

P. Barkley