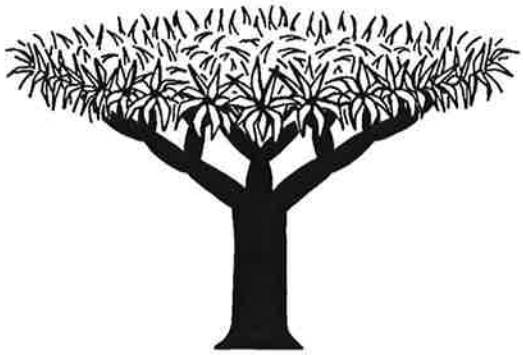
THE FRIENDS OF THE WAITE ARBORETUM INC.



NEWSLETTER

AUTUMN 2001
No 27

Secretary
Mrs Rosemary Sawley
8379 7102

Editor
Dr Barbara Possingham
8363 0346

THE SIXTH ANNUAL GENERAL MEETING

This was held on Monday 9 April and started with a reading by the President, Roger Bungey, of a letter from the Hon. Martin Smith, Member for Waite, telling us that the Netherby Kindergarten Repeal Bill had been passed. This means that the Waite Arboretum will be held in perpetuity to be enjoyed by all South Australians. The President said, " We sincerely thank members of the Netherby Heritage Group and all others who sent submissions to the Select Committee in relation to this Bill".

This completes the saga of the Kindergarten which has unfolded over the past 2 ½ years over a matter that began more than 50 years ago."

The President's annual report followed:

Activities for the year have been varied and included talks on a range of topics, Arboretum walks with a guided tour of the palm and cycad plantings, a visit to a gallery and a bush garden walk at Blyth, a ceremonial tree planting, a dinner and an art exhibition.

The speaker at our last AGM was Mrs Heidi Gildemeister from Spain, President of the Mediterranean Garden Society, which has its headquarters in Athens. She told us about the society and its activities and gave a talk entitled "Gardening the Mediterranean Way; Why Waste Water?" As a result of her visit a branch of that society has been formed in Adelaide with a growing membership.

In June a ceremonial tree planting was held on a Sunday morning to mark the return of the former site of the Netherby Kindergarten to the Waite Arboretum. Oaks from Mexico, Texas and Asia Minor were planted by Professor Mary O'Kane, Vice-Chancellor of Adelaide University, Professor Malcolm Oades, Director of the Waite Institute, Mrs Carlsa Carter, Joint Manager, Nature Conservation, National Trust of SA, the Hon. Sam Jacobs, our patron, Mrs Diana Mayfield from the Netherby Heritage Group and Roger Bungey, our President.

Dr Jennifer Gardner spoke on the history of the site and the significance of the planting ceremony which was attended by over 100 people and was a memorable occasion.

In August Dr David Paton, Department of Environmental Biology, and Dr Dagmar Hanold, Department of Applied Molecular Biology, both of Adelaide University, spoke on different aspects of "Mundulla Yellows". David spoke on the history, symptoms and spread of the disease, and Dagmar on work in progress to identify a causal pathogen, and research in epidemiology in order to design control measures. It is an alarming situation, little understood by the general community.

On a Sunday in September we visited the Medika Gallery at Blyth to see the paintings, prints and craft of artist, Ian Roberts, and other contributors, and then to his bush garden, several kilometres out of town where he has planted a large variety of native trees and shrubs on a bluegum and peppermint gum site. This was a wonderful outing and opportunity to see some remarkable achievements of painting and tree planting by our host.

In November we enjoyed Arabesque, a dinner for 40 members and friends prepared by chef, Rosa Matto. Botanist and story-teller, David Symon, described the Arab contribution to Mediterranean cuisine in a wonderful account which continued throughout the meal. Wines were donated by Orlando Wyndham for which we were grateful.

In February we gathered with Palm and Cycad Society members for a conducted tour of the planting along the watercourse in the Arboretum. The secretary of the society, Heinz Froehlingsdorf, talked about the species planted and gave us an informed introduction to their plantings which have greatly enhanced this part of the Arboretum. Planting of palms and cycads began about 10 years ago. This was followed by drinks on the Urrbrae House verandah.

In March an art exhibition entitled "Beautiful Birds and Botany", works from our host for the Blyth expedition and Vida Pearson was opened by Dean Nicolle. This was a very successful exhibition and fundraiser for the Friends, and we sincerely thank Cicely Bungey and her helpers for managing this exhibition and Ian Roberts and Vida Pearson for choosing us to hold it.

Perimeter signs have been put in place at entrances containing information about the Arboretum and we hope that this will encourage the public to enter and enjoy the surroundings. We are doing all we can in this and other ways to make people aware of the Arboretum which is frequently described to us as "Adelaide's best-kept secret".

I wish to thank all the committee members, guides and volunteers for their work during the year. Especially I thank Norma Lee for her skilful operations as treasurer, from which she retires after this meeting, and to Barbara Possingham, the Newsletter editor, and to many contributors who make it such an interesting communication link for the Friends.

Retiring committee members are: Robyn Barker, Lorraine Nettleton, Jill Barge and Norma Lee. Remaining members are Cicely Bungey, Rosemary Sawley, Barbara Possingham, Colin Jenner, John Mably, Natalie Stowe, Roger Bungey and Jennifer Gardner (ex officio). New committee members are Pamela Brinsley and Kevin Kemmis.

Roger Bungey retires as President and all office bearers will be appointed at the next committee meeting.

Roger Bungey.

Cicely Bungey thanked the outgoing President for his untiring work on behalf of the Arboretum, especially towards the repeal of the Netherby Kindergarten Act which had threatened the integrity of the Arboretum.

FRIENDS OF THE WAITE CONSERVATION RESERVE

Some 50 people gathered at Urrbrae House on 26 February to launch another support group concerned with the Waite area. We owe thanks to Jennifer Gardner for the good-will and energy which she gives to the Friends of the Arboretum, the Friends of Urrbrae House and now to another group of Friends.

It was interesting to hear the history of the Conservation Reserve from Enid Robertson who had worked at the Waite from 1947 to 1950 as Systematic Botanist and Curator of the Waite Arboretum. She was also Weeds Advisor to the Minister of Agriculture at that time and began the work of identifying the 980 specimens which formed the herbarium of the advisory service.

In the 1980s she was involved in the development of the walking trails in the Waite hills land and the start of weeding out pest plants through the minimal disturbance principle. Student working groups included Phil Shearman, who is still a great supporter, were active at that time and were remunerated. The Director of the time, Harold Woolhouse, made the work possible and his loss to the University, was devastating.

Informal Friends began work in 1997 and now it is time for a vigorous, formal group to be inaugurated and to protect this 160 hectare hills face reserve of valuable indigenous vegetation.

The guest speaker was Dr Scott Field who lectures in the Department of Applied and Molecular Ecology. He spoke of the early destruction of the Glen Osmond Hills and the current work in regeneration by weed eradication so that nature can do its proper work. He described, with slides, many of the plants local to this grey box grassy woodland and the birds, mammals and insect life which abound.

Barbara Crompton

IN THE ARBORETUM

Phoenix theophrastii

Cretan Date palm

A recent monograph on *Phoenix* considers thirteen species distributed from the Canary Islands to Hong Kong. They are pinnate-leaved palms and can usually be recognised by the lower leaflets modified to strong pungent thorns and also by the leaflets folded upwards ie with the keel down. Three species are well known in Adelaide. The large, handsome Canary Island Date Palm, *P. canariensis* (in many gardens and also in Robe Terrace), the true Date *P.dactylifera* (near the Parade Grounds and in front of the Museum), and the much smaller *P. roebelenii* (as a pot plant on porches and in gardens).

An introductory comment in the monograph states: "Despite a certain tolerance of some species to high salinity, atmospheric aridity and heat, all require constant moisture about the roots....." "In the driest areas, Phoenix species act as good indicators of ground water; for example, the date palm is the well known symbol of oases".

Our species was described as recently as 1967 from Crete and is now recognised from other coastal areas on the island with some disjunct populations in Southwest Turkey. However, as it is clearly related to the true Date, these may be no more than temperate outliers of the Date. However, ours came from the north coast of Crete at Malia where Judy and I threw beach stones up into the clump to bring down a few dates. Fortunately we were lucky to get both sexes amongst out three plants and they have reached flowering size. Flowering has to coincide for any hope of fruits but we have no record of that happy event yet.

Although very closely related to the true date, the fronds tend to be somewhat shorter, more pungent and more glaucous. No suckers have been removed from our plants (a

fearsome task). Date palms also sucker; it is a method of reproducing select clones and mature orchards appear to be of single stems.

Despite its recent botanical name the Cretan palm was known in classical times and recorded by Theophrastus, 370-285BC.

The monographer's statement that *P. dactylifera* and *P. theophrasti* are difficult to differentiate on the basis of morphological and anatomical data such as the specific status of the latter species is debatable. Even if so it is an interesting palm to have as it is manifestly adapted to the Mediterranean zone. This trio of plants demonstrates the time it takes to evaluate new introductions. Planted out in 1973 and thus now 27 years old, it is far too early for any final judgement.

David Symon

Note from the editor:

Friends might like to know that this palm features in a section of 'Gardening Australia' which was filmed.in the Arboretum. Screening data of this program on palms is unknown.

GENETIC MODIFICATION: SOME FACTS FOR THE DEBATE

Genetic modification refers to the heritable alteration of genes. Recently, the term has come to apply specifically to newly developed recombinant DNA technologies, where the genome of an organism is modified using artificial techniques. These rely on the ability to cut DNA precisely, isolate desired fragments then employ a vector to insert the DNA into the single cell of another organism. From this transformed cell can be regenerated a new multicellular organism. There is a wide range of applications of the new technology, from employing yeast to synthesise human insulin, to making crops resistant to pest and diseases. However, it has also attracted much opposition, due to environmental, health and ethical concerns.

1. What is genetic modification?

Genetic modification (or 'GM') is the modification of genes so that the modification is passed on to the organism's descendants. Strictly, it is a general term that covers many processes - some of these are new, and some have been used for 10,000 years, since agriculture began at the end of the last ice age. However, the term has more recently come to be used for the process of 'genetic engineering', where newly developed processes of molecular biotechnology are employed to insert relatively few genes into an organism's genome. Other terms that have been used to describe this technology include 'recombinant DNA technology' and 'genetic manipulation', as well as more value-laden terms such as 'genetic enhancement' and 'genetic improvement'. In this article, GM using the new technologies is distinguished from GM using traditional techniques by referring to the former as the 'new GM'.

2. There are many methods of GM

There are at least three traditional methods of genetic modification:

a) Selecting for variability within existing populations. It is noteworthy that most modern crops have been so altered using this technique that it is difficult to identify their wild progenitors. Observing variability in many common garden plants provides another example of the results of this type of GM.
b) Crossing closely related species. For example, modern bread wheat has arisen from two sequential crossings of, in total, three species, accompanied by two chromosome doubling events.
c) Isolating mutants. For example, herbicide resistant oilseed rape has been developed from plants that appeared spontaneously in Canadian fields.

In addition to these traditional approaches, there is the new GM, involving the modification of specific genes in single cells using recently developed biotechnologies.
Essentially, this process involves:

a) The identification and isolation of a linear polymer of nucleic acids (a gene) that will direct the synthesis of a protein with particular desirable characteristics. The process of gene isolation requires in particular the action of bacterial enzymes that cut nucleic acid polymers in precise locations identified by their nucleic acid sequence. These are called restriction enzymes.
b) The movement of the desired gene(s) into another organism. Genes are usually moved into other organisms by exploiting natural pathogens whose mode of infection involves the injection into the host of genetic material. These are termed 'vectors'. Herbert Boyer and Stanley Cohen performed the first successful gene transfer in 1973. This gene transfer occurs into a single cell. When transforming plants or animals, an entire organism must then be regenerated from this single cell. Thus, transfer into single-celled embryos is technically desirable, as these are programmed for growth into a multicellular organism. Plants, however, have the useful trait of totipotency, whereby cells from the adult plant have the ability to regenerate into new adults - thus a range of cell types can be used for gene manipulations. The recent cloning of mammals from adult cells, most famously 'Dolly' the sheep, opens the door for this technology being transferred to mammals.

Traditional techniques for gene modification limited modifications to those occurring between closely related organisms. The new GM can be used for similar types of gene modifications, but it also enables the transfer of genes between any two organisms. Thus, although the new GM enables the addition to a crop's genome of just one gene, with a specific trait (unlike traditional breeding programmes, where thousands of genes are transferred at a time), the one gene could come from any organism, or even be created de novo in the laboratory. Overall, the new GM tends to bring in fewer genes, but potentially from further away, compared to the old GM.

3. Applications of the new GM

The first major product of the new GM was developed in 1982, for the production of human insulin by bacteria for the treatment of diabetes. In 1990, the first GM food product was approved for use in the USA, an enzyme employed in cheese making. In 1994 the first food product was sold commercially, the so-called FlavrSavr™ tomato, that had reduced activity of a gene essential for ripening. The development of GM animals with the disruption of gene function is providing numerous insights in the molecular basis for disease, and there is the distinct possibility of modifying pigs to provide organs for human transplants.

Recent commercial applications of new GM include the introduction of herbicide tolerance into crops such as soybean and oilseed rape, and the ability to synthesize insecticidal proteins in cotton and maize. Many other applications of new GM are being developed, including conferral of the ability to make antibodies in fruits and the ability to decontaminate polluted land by degrading organic pollution. New GM also provides opportunities to alter the composition of food to increase its nutritive value, such as increasing the mineral and vitamin content of grain (eg. 'golden rice'). Increases in food production are also possible, by improving overall plant qualities (eg. dwarfing rice) and by increasing tolerance to biotic stresses (pests and diseases) and abiotic stresses (eg. low temperature, drought, salinity).

4. Problems of application

GM has been subject to various types of objection. It has been pronounced unnatural, held to pose an unjustifiable risk to the environment and to human health, and felt to bring us unacceptably close to being able to manipulate human genetic make-up. Only the last of these is specific to GM, and then not to new GM - concern about eugenic policies antedates modern biotechnology.

The charge of being unnatural has been levelled at a host of targets. Those who bring it in this case still have to explain what is specifically unnatural about new GM that it does not share with many long accepted procedures.

More serious is the contention that new GM threatens unintended, undesirable, and perhaps also unforeseeable environmental and medical consequences. It brings the risk of the escape of organisms, or at least their genes, into wild populations. For example, the spread of insecticidal proteins into wild plants could confer a competitive advantage on those plants, disrupting semi-natural systems. Likewise, effects on insect populations could be significant. Although having herbicide-resistant crops will decrease herbicide use, it will increase the effectiveness of applications, reducing weed densities and thus continuing a decline of wildlife that has been going on since agriculture began.

Exposure of human populations to large amounts of novel proteins that have never previously been in the human food chain could cause unpredictable problems. In particular, allergenicity could cause problems that would be difficult to detect, as symptoms can take a long time to develop.

Issues involving new GM and animals raise a further range of ethical questions. They also suggest the potential for the transfer of GM technology to humans and its use as an instrument for manipulation of human genetics - giving rise to the fear of its use for objectionable ends, or of damage to human life as an unforeseen consequence of well-meaning actions.

These issues, however, concern only particular applications of new GM, not the technology per se. Since it has so many applications, generalisations about the whole technology are difficult. Most features of most applications of new GM are not profoundly different from the processes that have been performed on plants and animals for the past 10,000 years, so objections to new GM need to be carefully formulated to address its unique features.

5. Problems of public acceptance

Recent concerns with GM plants have not arisen in a significant way with GM bacteria and GM yeast, despite the widespread commercial application of new GM techniques to these organisms for many years. Diabetics have used insulin from a synthetic, human-like gene inserted into bacteria and yeast, for well over two decades, with no loud public protest. Another example of widespread application of new GM is vegetarian cheese - people have been consuming genetically engineered rennet protein for many years.

However, current traits conferred on crops reduce application of insecticides and herbicides, and although benefiting producers offer no evident benefits to consumers. For those who experience no benefit but sense a possible risk, the natural reaction is one of rejection. Furthermore, allowing the patenting of the technological processes of GM (in contrast to plant variety rights that protect the output of traditional breeding) places new GM in a different position to traditional GM, a situation related to the fact that this second 'green revolution' is privately funded, in contrast to the publicly funded first Green Revolution. This comes in the context of a general distrust of science, fed by historically recent misuse of science (eg. for the development of bio-weapons) and mistakes by scientists (eg. BSE).

Further reading : A list of texts and articles, sent by Mark Tester, is available and can be provided, on request, by contacting the Editor.

Mark Tester
Lecturer, Dept of Plant Sciences, University of Cambridge, UK
and Friend of the Waite Arboretum

BEAUTIFUL BIRDS AND BOTANY

The morning of Sunday 4 March was beautiful and to walk through the Urrbrae Garden into the old house and to be surrounded by flowers and birds was a gift of tranquillity to me and I hope to the large crowd assembled there.

The works of Ian Roberts of Blyth and Vida Pearson, who works in bushland near Ballarat, were opened by Dean Nicolle who has been a Friend and supporter since the first group began. His work in cataloguing and collecting eucalypts is monumental and continues to the benefit of the botanical record.

Both artists were present and it was an added pleasure to talk to them about their work. Vida's early training was at the North Adelaide School of Art but her many travels, in search of inspiration and material, have constantly informed her work. She works with watercolours and linocut printing. At this exhibition, 22 of her strong, vivid prints were hung and they represented birds and flowers from many parts of Australia.

The works of these two artists complemented each other effectively and I thought that this relationship of differences drew out elements in both which might otherwise pass unnoticed. Ian has grown into painting over time as a result of living and working in the Clare Valley. His watercolours are delicate, detailed and painstakingly accurate. The colours are gentle and true to type, making a record of his local birds and trees, and those of other places too. I was particularly drawn to his Eucalyptus seedling studies and asked him if he had ever painted my favourite eucalypt, the grey box. He said that he raises the seedlings for his paintings and there were no grey box in his area but he would paint one for me if I would send some seed. So I said "You're on!" That was a delightful day and I must go again and enjoy the works of these two artists in solitude.

Barbara Crompton

TREASURER'S REPORT

The major expenditure in the Arboretum this year was $7 000 on weeding, pruning, a survey by Arbortech of work required to be done, oak trees etc and $3 000 on signs on the perimeter inviting the public in.

This took care of the matching grant of $10 000 which we had from the Waite Institute.

A further amount ($307) was spent on posts for the beginning of the re-establishment of a self-guided walk in the Arboretum. I hope this project will be completed soon.

Although we raised $8 000 during the year, this will not be matched in 2001 by a dollar-for-dollar grant from the Waite, as has been the case in the past, because of the University's changed financial circumstances. We are however still in a healthy financial situation, but it looks as if we will have to depend on our own fundraising to support the institution.

I reported last year that membership was up and am pleased that this has been maintained this year (about 150) with an income of over $2 000 from subs and a further third of that (about $700) in donations from Friends. Other income came from the Gilbert Dashorst exhibition - over $2 000 - the Arabesque dinner - over $750 - and bank interest - $1 200. Various sales of plants, cards, jewellery, and books together with money from guided walks brought almost $1 250.

We started the year with $30 000 and finished with $37 000.

With reference to the changed tax situation since 1 July 2000, we have obtained an Australian Business Number, and once again are registered as an income-tax-free entity and a deductible gift recipient. I decided after some research and with the committee's support that, since we pay very little GST, it is easier not to be registered for GST. If future committees want to reverse this decision, there is still the option to register at any later date.

The detailed accounts have been audited by Mr Bernard Arnold, whom I thank and a copy of the financial statement for the year is attached.

Norma Lee

NEW MEMBERS

A warm welcome to the following new members:

Robert Boardman, Urrbrae, SA.
Leonie Fairbrother, Clarence Gardens, SA.
Ann Gardiner,Goodwood, SA.
Colin & Lorraine Kernick, Prospect, SA.
Ben Seamark, Walkerville, SA.
Shephard Family
Barbara Wheaton, Royston Park, SA.

VALE: Tim Mares and Robin Eaden

Tim and Robin were tragically killed in a car accident on February 9, 2001. They were both Friends of the Arboretum, and their deaths were a loss to many of us associated with Adelaide University. A Memorial Service to celebrate their lives was held in the Arboretum on February 18. Their support for and appreciation of the beauties of the Arboretum was illustrated by this choice of venue.

FORTHCOMING EVENTS AND DIARY DATES

Meetings are planned for August and October as well as the Xmas party in December; you will receive information about these meetings later.

THOUGHTS ON TREES

From Brian Milligan

Nature gives to every time and season some beauties of its own: and from morning to night, as from the cradle to the grave, is but a succession of changes so gentle and easy that we can scarcely mark their progress.

Charles Dickens

FINANCIAL STATEMENT FOR 2000

Net assets forward from 1999		$ 29,989.61
Cash on hand		38.30
		$ 30,027.91

INCOME

Subscriptions	2078.00	
Donations	696.80	
Tours	227.00	
Plant Sales	138.00	
Publications	1165.00	
Arboretum Cards	40.50	
Jewellery, paperweights	905.00	
Exhibitions:		
Photographic (last year)	263.50	
Dashorst	8299.45	
Arabesque Dinner	2580.00	
Grant from Waite Institute	10000.00	
Bank Interest	1180.82	
Website Refund	116.40	
TREENET	20.00	
Dishonoured Cheques	525.00	28,235.47

EXPENDITURE

Arboretum:		
Weeding	546.00	
Survey, Pruning	6250.00	
Oak trees	190.00	
20 Greenwell pots	00.00	
Perimeter signs	3070.00	
Self-guided walk	307.00	
Subs:		
Trees for Life	45.00	
Friends of Bot. Gardens, Vic	15.00	
Exhibitions:		
Photographic (last year)	32.65	
Dashorst	6292.54	
Arabesque Dinner	1802.40	
Publications	714.00	
Jewellery, Paperweights	632.00	
Newsletters	258.20	
Meetings	88.45	
Postage	4.70	

Volunteer Name Tags	28.60		
Website	246.40		
TREENET	20.00		
Dishonoured Cheques	525.00	-21,167.94	7067.53

NET ASSETS FORWARD TO 2001 **$37,095.44**

Represented by:

Balance, Com Bank	12,056.37	
Macquarie Bank	25,011.37	
Cash on hand	27.70	**$37095.44**

Notes: 1. The dishonoured cheques resulted from a bank error. The bank has apologised and charged no fees.

2. The TREENET payment was paid to our account in error and was refunded to TREENET.

Norma Lee, Hon. Treasurer. February 2001

Auditor's Report: In my opinion the above financial statement has been properly drawn up in accordance with the books and records submitted. I have obtained all the information and explanations required by me.

B.J.P.Arnold