



Quandong

magazine of the
West Australian Nut & Tree Crop Association (Inc)
www.AOI.com.au/wanataca

First Quarter 2000 • Vol 26 No 1

ISSN 0312-8989 • \$3.00



The Black Mulberry (*Morus nigra*) (Sec: About the Cover, p. 2)

NEXT MEETING: Tuesday February 15, 2000: 7.30 pm

For the next General Meeting we have been fortunate in getting **Phil Bellamy** to speak to us. Phil will be talking about:

Making Money from Planting Trees in the Dryland Wheatbelt

Phil has been intimately concerned with the efforts of farmers to not only improve their land, fight salinity and waterlogging, and get environmental improvement, but also to make money from their efforts, or at the very least to fund most of their land improvement work from by-products of their tree planting. In a difficult economic climate, only this sort of self-help is likely to have much effect.

Phil runs his own consultancy company in this area, and also works with Greening Australia WA, and Landcare and Catchment Groups.

*Meeting at Kings Park as usual. Full details on attached leaflet.
Visitors welcome, no charge. Queries to Tree Crops Centre, 9388 1965.*

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About the Cover

The cover drawing of the Mulberry, *Morus nigra*, is from 'Fruit for the Home and Garden', by Leslie Johns and Violet Stephenson (Cornstalk Publishing, 1991). See the article on page 14.

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[Sunday Times / 1999 Jun 20]

Seedling idea bears fruit

Bev Hundley and her husband Marden went to Esperance in the 1980s to run sheep.

They ended up with 14,000 of them, but as woolgrowing became less viable, Mrs Hundley turned her hand to tree seedlings. What started as a minor cottage industry has become a major agroforestry venture.

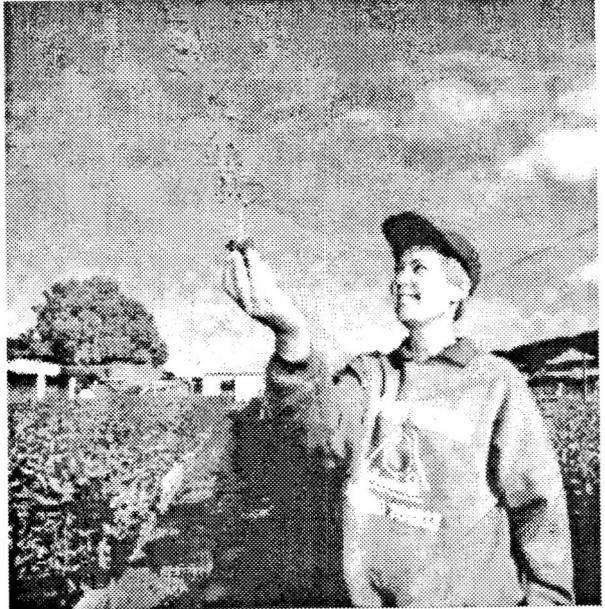
The sheep farm was sold off and their new business now produces 3,000,000 tree seedlings a year and turns over about \$750,000.

"It started off as a bit of an experiment," Mrs Hundley said.

Now thriving, the nursery has contracts from farmers and plantations all over WA and Victoria and employs a fleet of casual staff for nine months of the year.

"Everything is planted from November to January and they all go out between June and the end of August when we will be completely empty, except for the garden stocks which we have built up," Mrs Hundley said.

Planting trays are returned, sterilised and the delicate germination process starts all



Bev Hundley with one of the three million tree seedlings she has for sale. Picture: Ian Cugley

over again.

"I started looking at pasture seeds, trees and shrubs for our property, which we farmed 60 km west of Esperance, to improve the land," Mrs Hundley explained.

"We got that going and then moved to this place to concentrate on the nursery, which by

Quandong Links to ATCROS

Many of the articles, advertisements, and news items in Quandong refer to organizations and people who are listed in the Directory section of the ATCROS Web Site, which is at:

<http://www.AOI.com.au/atcros>

In this issue, items underlined in the text have Atcros reference numbers listed at the end of an article or elsewhere close by. This is so that readers can get more contact details.

ATCROS usually lists name, address, and phone numbers, also fax, e-mail, and web page details where available.

Quandong: Atcros ref. <A1466>.

that time had grown to 300,000 seedlings.

"I had the farming experience and I looked at the nursery side of it and thought 'Hey, if all the trees that had been planted around Esperance had survived it would be like a forest, so there must be something wrong'.

"A lot of people didn't understand that the land was going to salinity, or the technology needed in the nursery. I started to look at that and marry the two things together.

"We grow everything from seed, we seed them into a pot, germinate them and put them into the nursery and sell them when they're ready.

"Wind and salinity are problems in Esperance and we are looking at using

agroforestry in existing farming systems to improve them.

"We try to develop trees that will have a commercial benefit to the farmers later on, as well as being of benefit as a windbreak and lowering the water table. They might be able to prune them and use them for timber, or have a block of sugar gums which are ideal for firewood, instead of burning jarrah."

A sea container next to the nursery is loaded with 100,000 seedlings for delivery around the State. "It will leave 18 times in the next month," Mrs Hundley said.

— *Bruce Butler*

Ed: Bev is a long-time member of WANATCA.

Patrick Howden, cow trees, loquat nuts, and more ...

A customer came into the Tree Crops Centre one day, and asked whether we had a book called 'How to Live, Free at Last'.

We didn't, but promised to locate it if we could. And so started a trail which led to Cow Trees, Loquat Nuts, and more.

We located the author, Dr Patrick ffyske Howden, and he was happy to supply us with the book, which he published himself. When the book order and accompanying material arrived, it was obvious that we had something quite different to the ordinary run of books.

Here's how we listed the book in the Granny Smith Booklist:

1299H * HOW to LIVE - FREE at Last. A Personal & Community Guide to Massive Savings in Costs, Energy, Time, Travel, Rent. Howden (Aus, 1999). 120p. Pb. Wonderfully exuberant, wide-ranging book, absolutely crammed with money-saving, ecologically sensitive ideas about growing, eating, and

living. The supreme 'alternative lifestyle' book for conventional Australians! \$20.00.

And here's an extract from the author's own introduction, which mentions that the book was set up on an ancient 512K Macintosh computer.

There's Always a Better Alternative!

Self-Reliance or Sustainability as an ECO-operative effort in the home, can only be achieved by enjoying a number of small-scale improvements and conservation, one step at a time. Then you should find that energy, food, housing, medical, entertainment, transport, education, security and other 'crises' are a myth. . . Most texts barely touch on the 100s of ideas needed to save air, earth,

perhaps hundreds that replied, not one seems to have followed through — now, there's a social indicator somewhere! At that rate it seems slim chance of fulfilling my dream to replace every soil-destroying cow by a land-saving cow tree in the near future, much less keep any remnant milk mafia at bay...

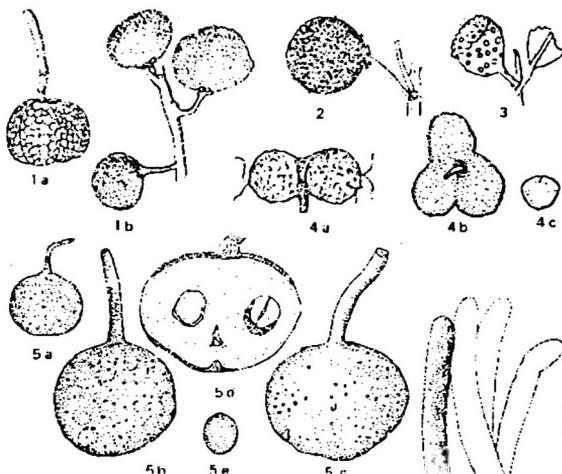
Milking the B-A is like rubber tapping for its milk-latex, without needing a vet or having to milk the darn thing regularly. It's so easy that simply removing a leaf from a twig results in milk dripping therefrom. Besides, you'll never catch mad cow disease.

Next of several vital projects for our highly sustainable home is to breed seedless breadfruit, because these have about half the nutritional value of bread, a massive bonus considering the colossal energy needed to make bread, more still for toast, albeit zero to grow breadfruit. Any sources out there anyone?

Surely the additional message is to protect the world's forests of near unknown treasures, just as Peruvians, Mexicans and Central American hill folk protect their cow tree habitat.

— Pat. (Dr. Patrick ffyske Howden, BackYard TEch, Cone St, Macleay Island Qld 4184, Australia. Tel/Fax 07-3409 5100. SAE please.)

David Noël comment — "I have recently obtained some cow-tree cuttings, and some have struck! On seedless breadfruit, most commonly-grown fruit are already seedless — they are propagated from root cuttings.



Fruits of *Brosimum* (from 'Fruits of the Guianan Flora', by van Roosmalen): 1. *B. acutifolium*; 2. *B. alicastrum*; 3. *B. guianense*; 4. *B. lactescens*; 5. *B. parinarioides*.

Fruits with seeds are sometimes grown for the edible, chestnut-like seeds, called "breadnuts".

Loquat nuts

In a phone conversation with Patrick one day, the topic of loquats came up, and we agreed that this is one of the most under-exploited fruits in Australia. They grow readily from seed, and produce madly with little attention, a delicious fruit which is ready in the Spring and can be dried or processed for later use.

Pat mentioned that he ate the SEEDS of the loquats routinely — he thought they tasted like peanuts. He had tried the seeds after extracting them from the jam saucepan, made with boiled-up whole loquats. I tried microwaving and eating some seeds myself — they weren't bad, quite nutty, with a distinctive strong flavour. So here's another use for loquats!

Mt. Coot-tha Botanical Gardens: <A.3323>

[Mt. Coot-tha have recently become WANATCA members].

[Australian Quandong Industry Association Conference, Port Augusta, 1999 Aug 28-29]

Winter time is quandong grafting time (the Percy Prenzel method of simple grafting for growers)

You will need the following tools.

- 1: A shade house
- 2: A comfortable well lit area to work in.
- 3: A quality grafting knife [single edge sharp] or a scalpel [Handle No 3, Blade No 11].
- 4: A cutting surface that can be kept sterilised.
- 5: A magnifier — head mounted or on a stand etc.
- 6: Sharp scissors or fine secateurs or dog nail clippers
- 7: Methylated spirit
- 8: 'White King'—sodium hypochlorite bleach
- 9: Grafting clips.
- 10: Spray bottle
- 11: Plastic bags to cover the grafted plant.
- 12: Gutter guard to hold the plastic clear of the grafted plant.
- 13: A pair of broad pointed tweezers or small fingers.

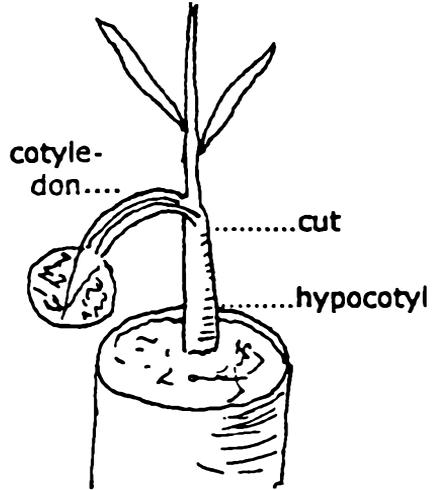
Plant material

The seedlings you are grafting on to: Must be healthy, young and growing vigorously and they must be young enough for the stem section (the hypocotyl) below the cotyledon to be still swollen. The seedling to be in the largest container that is satisfactory for your purposes.

The grafting plant material must be green in colour and flexible, not limp. Buds must be visible at the base of the leaves and make sure that the bud tips are not black (mite damage).

Collecting and preparing plant material

Get the cleanest and most vigorously growing material you can. Wrap in damp



newspaper and store in a refrigerator or cold container until needed. Do not freeze.

When you are set up ready to start, soak this plant material for ten minutes in clean water with White King added (50 ml to the litre) to make a 5% solution. Rinse in clean water, pat dry with paper towel and leave wrapped in damp paper until needed. All plant material must be dry.

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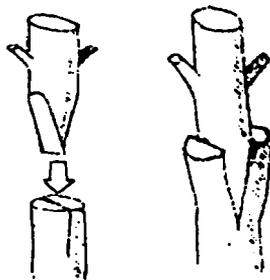
Phone: 08-9407 5100 • Fax: 9407 5070

Hygiene

Sterilise everything. Have a container of 10% white King handy and paper towel to wipe down all working surfaces at regular intervals. Have a container of methylated spirit handy to dip your tools in after every cut. Wipe off with paper towel. Have a spray bottle of the White King mix to spray over the top of the pot and inside the covering plastic bag.

How

Nip off the seedling below the cotyledon, in the hypocotyl, with the scissors etc, hold the stem with fingers or tweezers and cut down the centre with the scalpel etc for 5 to 8 mm. Select a piece of grafting material with a healthy bud and of the same diameter as the seedling stem and cut a V as in the diagram. Put together and hold with a grafting clip. Wrap the container with gutter guard, spray the pot and inside the plastic bag with White King



and cover. Secure with a rubber band.

After care

Put in the shade house and observe. When the buds start to shoot cut the top out of the bag or put a hole in it. Remove the plastic bag sooner rather than later. If the shoots become long whilst in the bag it is unlikely that they will survive the removal of the bag.

[West Australian / 1999 Aug 7]

Plants get a new family tree

Revelations at a congress in the United States this week have sent shockwaves through the world of plant science.

Scientists have released the most complete analysis yet of how the world's million species of plants are related

Their study has overturned longstanding theories on how the first single cell algae advanced in size and complexity to become the showy trees and flowers that are the pinnacle of plant evolution today.

A five-year effort by 200 researchers in 12 countries has found that a rare tropical flower — the amborella which is found on the South Pacific island of New Caledonia — is the closest relative of Earth's first flowering plant.

The discovery uproots both leading theories on what the first flower looked like

and apparently solves what Charles Darwin called the abominable mystery of how plants made the leap from primitive green monotony to full floral ebullience.

The analysis, presented at a botanical congress in St Louis, Missouri, also shows that there are at least three plant kingdoms rather than one, as most high school students are taught.

Scientists found that plants invaded land not directly from the sea, as previously thought, but from fresh water after millions of years preparation.

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The new work was made possible by recent advances in cladistics, a field in which scientists compare the most evolutionary relevant traits among various organisms. It sheds dramatic light on the emergence of flowering plants, believed to have arisen about 135 million years ago, from their nonflowering predecessors which persist today as pine trees and related plants.

Until now, scientists had thought that the first flower closely resembled either today's magnolias or water lilies, both of which lack many of the specialised parts of more modern flowers.

No one suspected the debate would be settled by the even more primitive amborella, a single species of which lives in New Caledonia.

Four groups of scientists at St Louis offered strong evidence that the amborella — probably pollinated at first by prehistoric beetles — belongs on the lowest branch of the flowering plant family tree, with all other flowers appearing later in history and “higher” up in that tree.

Flowering plants have an advantage over others because their seeds are protected inside a fleshy fruit.

Casimiroa update from Kevin Bligh

Hi, Kevin here. You asked about our Casimiroas [which we are marketing as Aztec Fruit]. I left the water erosion work I had been doing in the Department of Agriculture in '96. Things have been fairly hectic, settling into our new lifestyle when we built and moved to the South-West.

I'd have got back to you sooner if it weren't harvest-time for our casimiroas, following on from a late vintage— though we only grow grapes, not produce wine. We have had some varied experiences, trying to pick the casimiroas when they are ripe enough, but not too green. We have had a few reports of the Wilson variety not ripening, but shrivelled when cut weeks after picking. I had done the picking of our smaller crop last year, and left it too late, when they were well-and-truly yellowing. Marnie, my wife, picked more out-of-a-face earlier on this year, partly by size, and may have got some too early.

Our Reinicke Commercial variety set only a very small overwintering February crop this year, and also a fairly small June crop.

We also had our first crop of Max Golden (from eight and nine year-old trees) but they don't seem to yellow to indicate ripeness, so those we harvested were picked too late, with unfortunate results. We also have a few McDill trees, one of which fruited (for the first time) with very large fruit. Perish the thought, but we may have to consider grafting the Max Golden across to something else!

Now that the pick is practically over, I guess we actually picked less than half of the marketable fruit on the trees, including the pollinizer varieties, Vernon, Ortega and Lemon Gold, and quite a few “mistakes” of so-far, unknown varieties in what we got from Birdwood Nursery in Queensland. Marketing in half-a-dozen local fruit shops has been slow-ish, but steady, while Bullfrog International at Canning Vale are interested, though with over-ripeness, our returns were low. Maybe with experience at picking, and if more small shops rather than just Coles and Woolworths can be tempted to take them on, we may be able to pick our whole crop.

— Kevin Bligh (June 1999)

<walburra@netserv.net.au>

Honnef Nursery a leader in rare fruits

Queensland nurseryman Franz Honnef is a member of WANATCA and a leader in rare fruits for subtropical and warm temperate areas. The Honnef Fruit & Nut Tree Nursery has worked closely with the Tree Crops Centre, which has set up Web pages for the nursery at www.AOI.com.au/show/honnefnursery. Franz has kindly agreed to Quandong using his material, and we present here his guide to a house orchard.

How to start your fruit tree orchard

On a small area, plant only what you really like to eat. If possible get smaller growing grafted trees. For more variety they are available in citrus and apple as well as Japanese dwarf peach, dwarf mangos, custard apple, persimmons and more.

Plant evergreen, everbearing fruit hedges. These hedges look beautiful. They are ideal for privacy and wind protection. A dense hedge around your fruit tree orchard makes you feel as if you are in a room.

Now start — put a Wai-chee Lychee in the centre. Then let a path go around it. From this

inner circle let your path go toward the house. On the east side you should have **Lemon, Lemonade, Mandarin and Orange** trees.

Don't forget to plant two **Kumquat** trees in big containers to be placed right and left of your entrance or verandah. One kumquat should be the old fashioned Marumi which is excellent fruit for jam or used in drinks and as a meat tenderiser. The new kumquat is from China. Its name is Meiwa. The word means, if translated — 'the one they talk about'. This small fruit is sweet and you can eat it with skin and all. Kumquats bear most of the year.

Now, let your path follow along to a dwarf **Persimmon** from Japan. Fuyu is the name of the two to three metre weeping tree. It looks so pretty heavy loaded with bright orange fruit. The fruits are non-astringent. You can eat them hard like an apple.

Nearby, the African Pride **Custard Apple** grows only to a medium size. It's an early bearer and very sweet too.

For a **Mango** tree on a small block of land, I would plant a grafted Irwin or Nam-Doc-Mai in the southwest corner of the block.

In the sheltered area you could try some of the more exciting new trees like the bushy short **Abiu** from the Amazon — the large bright yellow fruit is deliciously sweet with a distinct caramel flavour. In winter the tree has a heavy load of fruit and a small crop in summer.

Nearby, the picturesque evergreen **Five-corner** fruit is such a good fruit — we have the

Acotanc-2001 Conference:

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PERTH WA, APRIL 13-20, 2001

The Ninth Australasian Conference on Tree and Nut Crops will be held in Perth, Western Australia, from April 13-20 (Easter), 2001.

Offers of papers and poster papers are invited now from potential participants worldwide.

Get on our information list by sending a blank e-mail with 'Acotanc Inform' as the subject, to:

acotanc@AOI.com.au.

Principal Host: WA Nut & Tree Crop Association Inc.

"A great reason to come to Western Australia"

best varieties in Australia. It has very sweet, crispy, juicy fruit. The tree is covered in pink flowers, weeping branches, light green foliage and a delight for the eyes. The fruit has many uses — eat it like an apple or you can cut them in slices for an exotic fruit salad. The perfect star shape has many uses for decorations for cakes and sweets. Put into the blender—the five-corner fruit will make a delicious drink.

Now back to your fruit hedge. Plant the bushes about two metres from the fence and one and a half metres from bush to bush so they can grow together into a dense hedge. You can prune your hedge in any shape for form or let it grow naturally.

The species I suggest are the following: **Jaboticabas**, bearing 30 mm diameter fruit out of the trunk of the tree. They are black, grape-like and good to eat. Our tree bears fruit six times a year

Grumichamas, with delicious cherry fruit; **Acerola Cherries**, with the high vitamin C content, delicious red cherries for many months of the year. In California they are grown in plantations for the natural vitamin C tablet manufacture.

Brazilian Cherries are ideal for hedges and are very hardy also; Red and Yellow **Guavas**, with their shiny leaves and a more strawberry flavour; the **Feijoa**, one of our favourite fruit, with the extra bonus of edible flowers.

We should not forget the **Rose-Apple** and its beautiful tree, like a lilly pilli. The fruit is yellow, sweet, and dry. If you put a dish of rose-apples in the house they fill the house with a lovely scent. It's not the large, fluffy flower, it's the fruit which has the rose scent.

We hope you enjoy your low maintenance hedge for life.

In a corner somewhere you can put some

of the smaller bushes like the dwarf **Peach**. It's a real ornamental and in spring is like a pink cloud and only grows to 1.4 m maximum height.

Ceylon Hill Gooseberry and **Cedar Bay Cherry** — these are both small bushes.

The **Blueberries** like acid soil, just like their relative the azalea, and a bush of large, red raspberries are an extra bonus on a hot summer day, eaten with icecream.

In front of the house you could put a **Chocolate Pudding tree** and an **Icecream Bean tree**. These evergreen trees are very ornamental. They would be a lovely surprise for your friends and guests. The chocolate pudding tree has big round fruit filled with black-brown chocolate pudding-like pulp. It is sweet and delicious and stores for five months at minus 10 degrees C. On a hot summer day, the fruit can be softened and are ready to serve with cream or yoghurt.

The icecream bean tree is a beautiful fast-growing tree. The long pods are filled with a sweet, white cream. Served cold from the fridge they are refreshingly delightful. The icecream bean tree is a nitrogen-fixing tree. This means that it takes nitrogen from the air and puts it in the soil — so it fertilises your soil.

You can grow your **Coffee** bushes under the icecream bean tree and have your own home grown iced coffee.

Love it, and God will bless you in your orchard paradise. If you need the above mentioned trees come and see us at Honnef's Fruit and Nut Tree Nursery, Callaghan Road, Narangba or phone 07-3888 1223 for more information.

— *Franz Honnef*

Honnef's Fruit and Nut Tree Nursery
<A1241>.

Syrian pistachio expert seeks Australian links

The Tree Crops Centre has been contacted by Mr Moh.Taher Mallah of Syria. Mr Mallah is keen to cooperate with current and potential growers of pistachios in Australia.

As a principal of the Al-Mallah Office, a company intimately involved with pistachio production and trading in Syria, Mr Mallah is considered a pistachio expert. At the same time, he believes that there is potential for a large pistachio production industry in Australia, and particularly Western Australia.

Mr Mallah is open to offers and enquiries to work with Australian interests in the setting up of pistachio groves here, whether as a joint venture or in the provision of expertise.

Syria is a major producer of pistachios and has a wealth of varieties and rootstocks for various conditions, none of which are in use in Australia. In fact the Australian industry at

present is largely dependent on one variety, 'Sirora', which was selected by Don Maggs of CSIRO. Apart from 'Sirora', only a few varieties selected in California have had any significant usage here. Sirora itself was an open-pollinated seedling of 'Red Aleppo', named in California after the Syrian town where the seed was sourced, and where Mr Mallah is now located.



Mr Mallah

Planned breeding and genetic improvement of pistachio crosses is an area of rich resources which has never been seriously tackled. For example, apart from the Mediterranean species which are best known, *Pistacia* species which are native to such diverse areas as Burma and Texas exist and could contribute to the pistachio gene pool.

The *Pistacia* genus contains species which are famous for their great hardiness, withstanding both immense heat and cold and able to grow in highly saline conditions. As well as the high-value nuts, pistachios may produce excellent animal fodder, and plant resins and oils.

Mr Mallah has been kind enough to write for us an article on 'The Pistachio in Syria', which is expected to appear in the WANATCA Yearbook for 2000. He can be contacted at the Al-Mallah Office, PO Box 7831, Aleppo, Syria (fax +963-21-571 2252).

— David Noël

We buy Macadamia Nuts

Macnuts WA would like to confirm that the 1999 price for N.I.S. (nut-in-shell) delivered to their Baldvis, Western Australia factory will be \$2.35 per kg at 10% moisture content and 33% kernel recovery, payable in 30 days.

Visits to our orchard/factory can be made by appointment.

For any further information please do not hesitate to contact us as below or phone Dave (General Manager) on 0417 937 674.



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[Greening Australia: Leaflet / 1999 Winter]

A native tree crop which oozes money

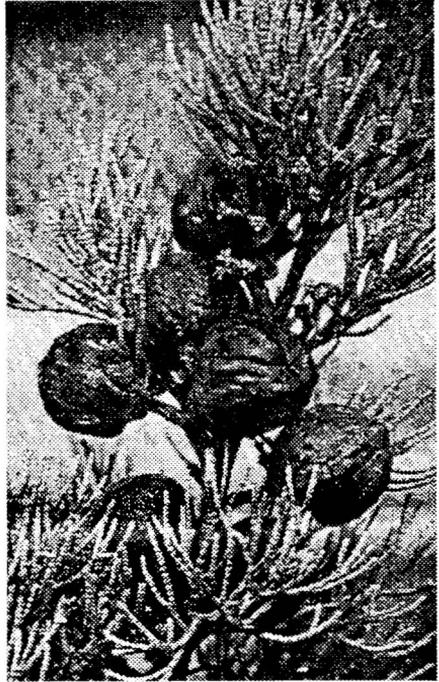
Consider these simple facts: a steel fence post costs in the order of \$3.80 for a 165-centimetre bitumen-black post with a life in acid sandplain soils of less than 20 years, or \$5.90 for a similar galvanised post with a life of 30 years.

Compare and contrast a *Callitris glaucophylla* (White Cypress Pine) post, with more than 40 years' life, even without any pre-treatment. And you can just grow your own.

This pine was prized by the early farming pioneers for its fencing timber. And it has another commercial bonus: the gum exudate from the tree is called Sandarac and can be used to coat pharmaceutical pills.

Sandarac can cost as much as \$34.00 per kilo, and anyway is virtually unavailable due to lack of supply. This makes it a very desirable commodity. Around 400 plants per hectare seems to be the required density to achieve acceptable timber production and growth for gum production.

An upright tree often displaying numerous



Callitris glaucophylla, White Cypress Pine

trunks, the White Cypress Pine grows to 12 metres in the single-trunk form but more commonly to a height of six metres in the multi-stem form. The leaves are small scales, growing in whorls on the branchlets.

The tree is found growing naturally in sandy soils although good plants have been found in hard-setting rocky clay white-gum soils.

It is widely distributed throughout the more arid parts of the state, in the 150-millimetre to 400-millimetre zone, and is fire-sensitive. In the natural bush, regeneration occurs from seed after fire.

—Phil Bellamy

[Phil Bellamy is to speak at the next WANATCA meeting].

Mulberry roundup

Everybody knows about the Mulberry — or do they? In fact, the mulberry familiar to us in Western Australia represents just one or two species producing mostly in backyards, often with most of the crop neglected. In this section we look at some familiar material and some little-known information — who knew that dried mulberries are the staple winter diet for the Hunza people of the Himalayas, or that there are native mulberry species in Bolivia? Here is another plant genus crying out for commercial development using modern techniques.

Make your mulberry weep

I have a mulberry tree which produces quite well, but is an over-vigorous grower which I would like to keep small.

I think it is a variety called 'Hicks Fancy'. It is one which grows easily from cuttings and has been used as a rootstock for grafting other mulberry varieties which do not root easily.

Neville Shorter is currently trying to sort out mulberry species and list good varieties (ring him on 9450 5606 if you know a good

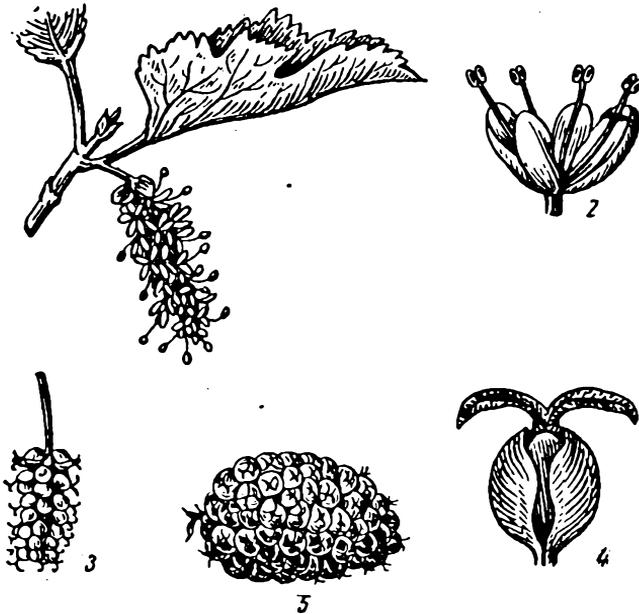
one growing locally). Although 'Hicks Fancy' produces purple-black berries I think it is actually a White Mulberry, *Morus alba* (common names of mulberry species apparently derive from bud colour, not fruit colour). The true 'English Black Mulberry' is apparently *Morus nigra* and is difficult to strike from cuttings.

Anyway, I have tried to keep my tree small (under 3 metres) by pruning, but have found that each year great vigorous shoots leap

away from the upper part, reaching for the sky. So last year I tried a new way — I bent the long upper shoots over and down, so they were like those of a weeping mulberry. The shoots are actually fairly pliable, some would just re-shape without damage, others would be partly broken.

This technique seems to work for me. The tree still puts growth into its upper shoots, even those partly broken off, but all these now hang down and are easy to prune. And the fruit is all within reach from the ground.

— David Noël



The Mulberry. From 'Chastnoe plodovodstvo' [Special Fruits], V A Kolesnikov. 1. Male catkin; 2. Male flower; 3. Female catkin; 4. Female flower; 5. Compound fruit.

[*From 'Fruit for the Home and Garden', Leslie Johns]

Mulberry, *Morus nigra* Origin

One of a dozen species of deciduous trees and shrubs grown mainly for the beauty of their foliage, and belonging to the Moraceae, a family to which the fig and breadfruit also belong. It has been grown in Asia and parts of Europe since ancient times, not only for its fruit, but also in some regions for its leaves, on which the silkworm feeds. It seems probable that the mulberry originated in Persia, although some say in the southern parts of the Caucasus, or in the Nepal mountain area, and because of its thirst-quenching, juicy fruits the plant spread to other countries.

Those who once used it for silkworms found that another species, *M. alba*, from the eastern and central areas of China where it had long been cultivated for its part in the silk trade, has leaves which when converted by the grub made silk of a superior quality, and so in time the black mulberry became cultivated for its fruits alone. So widespread has been its cultivation, whether for fruit or silk, that in those European countries blessed with a warm climate the tree has become naturalised in some places. The Greeks are believed to have introduced it into Europe from its homelands. The Romans praised its fruit. Indians grow and dry it. Back in Iran and Turkestan the tree has been exploited properly, and there are now seedless varieties cultivated in those countries.

In Australia we saw many inferior mulberries, referred to as 'English' mulberries, with small, hard fruit. These are nothing like the mulberries which deserve to be cultivated and were probably growing in too dry and a soil in too hot a climate. These were probably *M. alba*, popular in home gardens and capable

of producing acceptable fruit if well grown.

The mulberry came to Britain in the 1500s. King James I had an idea that he could enliven the country's economy by producing silk, and for this purpose he ordered mulberry trees to be planted in gardens about the country, some 100,000 in all, it is said. Planting continued until the beginning of the seventeenth century. The trees flourished, but not the silk trade. Some of the same trees can be found today in old gardens, for the mulberry is long-lived.

The fruit

Botanically, not a berry but a collective fruit, in appearance like a swollen loganberry. To describe the fruit one must first describe the flowers which are small and unisexual, the two sexes on short, green, pendulous catkins of no beauty, strictly utilitarian. The flowers which produce the fruits are made up of clusters of individuals consisting of four leaf-like structures which are grouped into two pairs.

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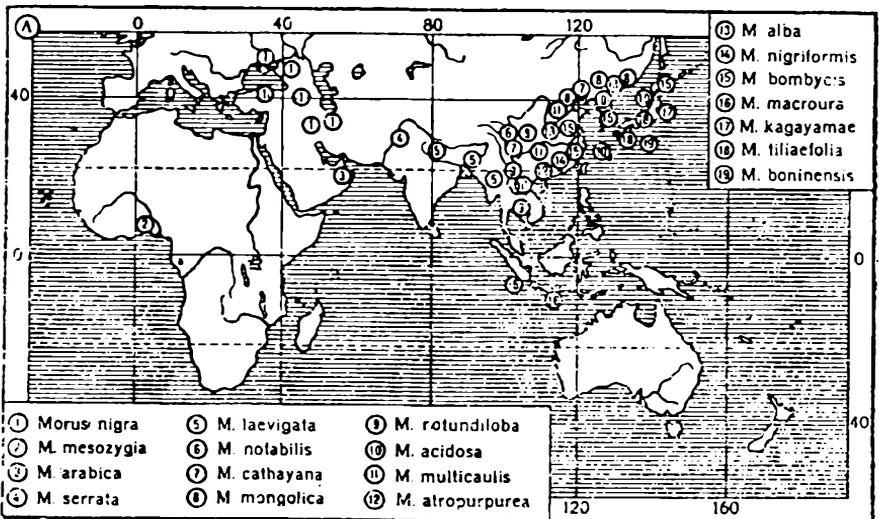
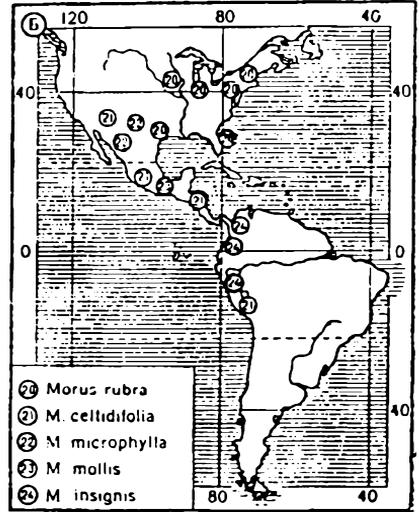
These enclose the pistil. When this has been pollinated and the seed begins to mature, these green growths do not fall away, as do for instance the petals of a bramble blossom, but they and their fleshy bases begin to swell. Ultimately they become completely altered in texture and colour, being succulent, fat and full of juice, and finally a purple-red in colour. In appearance, each tiny swollen flower roughly resembles the individual drupe of a blackberry, except that you can trace the shape of the perianth. The fruit is first green, then pink, finally becoming a crimson or purple-red. It is very juicy when ripe, and has a pleasant, slightly musty acid flavour.

The plant

The mulberry makes an attractive tree which will bear fruit while still small and young. Ultimately it becomes a large-headed, very spreading tree some 9 m tall, although it will take a long time to reach this size. It also grows into an attractive, informal shape with a short, rugged trunk. Some of the centuries-old trees still to be seen are often supported

with struts under their branches, leaning, gnarled and dignified, but still beautiful and fecund.

In northern climates the mulberry is one of the latest of trees to break its buds, later sometimes than the walnut. It does not resist the early autumn frosts either, so that it is bare



Distribution of Mulberry (*Morus*) species. From 'Vazhneishie Plodovye Rasteniya' [The Most Important Fruit Plants], F Kh Bakhteev.

for a great part of the year.

The young shoots are downy. The leaves, broad and somewhat heart-shaped, 2-5-lobed with coarsely toothed margins, are 8-23 cm long, the difference in size depending on whether they grow on the fruiting or on barren shoots. They are a dark green, rough-textured on the upper sides, downy beneath. The flowers appear soon after the buds break. The male catkins are more slender than the female, which are shorter and thicker. The mulberry makes a first-class tree for a small urban or suburban garden, particularly where some shade is sought. Its fruits ripen gradually so that a few can be picked each day for several weeks.

Cultivation

The mulberry makes a good town tree which will grow well in a tub. Although it does not enjoy tropical conditions, it is a sun lover. It likes a warm, well-drained soil, preferably a deep loam.

In temperate regions this is one of the few trees that need to be watered in dry seasons. If the roots become too dry during drought, the fruit is likely to drop before it has fully ripened. For this reason shallow soils such as those frequently found on chalk or gravel are not recommended

In cold countries the best time to plant a mulberry is in the spring when the ground is becoming warm, since this encourages root action. Take care not to damage roots, which should go about 15 cm below the soil surface.

It is not advisable to prune the trees heavily since the plant is inclined to bleed at the cuts. Obviously dead wood should be cut away as should any damaged or crossing branches. If pruning is carried out while the tree is dormant, bleeding will be kept to a minimum, and in any case pruning is always easier when there

are no leaves to obstruct the view. Old trees tend to lean, so where an elderly tree exists it is prudent to begin shoring up any branches which look as though they might need it one day. Try to keep the tree well balanced and attractively shaped.

The mulberry can be grown in the usual fruit tree forms, i.e. standard, half-standard, bush or pyramid, depending largely upon what the nurseryman has to offer. It can also be fan-trained, a good shape to choose if the tree is to be grown in a cold garden, for it can then be given the protection of a warm wall.

Obviously, if the tree is to be trained as a pyramid, it will require a certain amount of pruning. One should cut back laterals, the side shoots, to about six leaves in summer, but the leaders ought not to be cut, or if this seems advisable because they are very strong growing, nip out only the tips. Plants trained against a wall should be inspected, and those shoots growing out at right angles to the wall should be shortened, again to about six leaves. Trees grown in pots, usually 25 cm in size, should be re-potted annually before growth starts. Those in larger containers are best top-dressed.

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Plants can be raised from seed, but unfortunately the seedlings take many years to produce fruit. Cuttings and layers are quicker. Take cuttings in the early autumn, selecting 20 cm shoots of the strong new growth. Strike them in moist sand in a cold frame. They should root in early spring. Transplant to the open ground in a sheltered spot, and move them to their permanent positions the following spring.

Another method is to take short cuttings, just 3-5 cm long, with a heel of old wood attached. This should be about 8 cm long. Insert these firmly in the open ground in a shaded, sheltered position, with just two or three buds or eyes remaining above soil level. Roots should be well formed by the following autumn, but keep the plants in this place until the following spring, unless it is more convenient that they should be planted in the autumn. This is a good way to provide pot plants. Layering should be done in autumn.

Under certain conditions, i.e. in cold, wet situations, or after or during periods of drought, the fruit may drop from the tree before it is fully ripe. It can be collected and allowed to

ripen and then used for jellies or preserves. The ripe fruits fall easily, and if the tree is growing in grass they come to little harm and do not become soiled. One should keep watch, however, for birds, which love the fruits. It is possible gently to go over the lower branches of the tree each day and gather the ripest fruits. Unwashed, they will keep several days in a refrigerator in a covered container.

Culinary uses

The ripe fruits contain about 9 per cent sugar, with malic and citric acid, which means that they are sweet yet tart. We think that they are at their best when eaten straight from the tree with cream. Although one should handle the fruits as little as possible because they are so juicy and quickly stain the fingers, we like to wash them, especially as we have to collect so many from the ground. This is best done by dunking a colander holding just a few fruits into cold water, letting it drain well before emptying it and then washing another batch. Fruit for freezing is washed and allowed to dry in the air for a while.

The refreshing tart taste, in some ways reminiscent of grapefruit, means that these fruits can be enjoyed in salads and mixed with most of the foods that go so well with grapefruit — cream cheese, sour cream and yoghurt, for example. They also go well with meats — try a mulberry sauce with roast lamb.

They blend well with other fruits, especially ripe pears and apples. Garnish a compote with the berries at the last moment so that the juice does not get a chance to run.

The mulberries can be used in any way that other berries are used, in pies, tarts, puddings, sieved and raw, made into a fool by being stirred into a custard or cream, or sweetened and pureed as a sauce for ice-cream or a plain pudding. To make a compote

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pour boiling syrup, or better still mulberry juice syrup, on the raw fruits. We find that mulberry ice-cream is quite delicious.

The fruits really do stain, so take care. The juice is sometimes used to colour certain wines or cordials.

Preserving

Although these fruits are excellent pulped and put through a straining bag for jellies, which incidentally can also be boiled down to a paste, a preserve in which the fruits are kept whole is more unusual. For this a quantity of the juice is needed as well as the fruit. Use inferior fruits to render down for the juice.

Mulberry preserve

2 cups juice

4 cups ripe, selected mulberries

5 cups preserving sugar

Boil the sugar with the fruit juice and skim if necessary. Add the mulberries and turn off the heat. Leave the mulberries to warm through slowly in the syrup and then bring the mixture slowly to the boil and simmer it for 10 minutes. Pour it out carefully into a large bowl. The following day re-boil, again slowly, then simmer the mixture until it becomes thick and sets when tested. Ladle carefully into pots. This is a good preserve to serve with scones or home made bread. It is also very good served with vanilla ice-cream, especially if you pour on a little liqueur.

There is nothing like having a mulberry tree of one's own to discover how best to use the fruits. Since our own little tree came into bearing, our fruit menus have been greatly enriched. A surprising quantity can be gathered from a comparatively small and young tree.

Drinks

There is an ancient drink still to be found in odd corners of France which was made

from mulberry juice sweetened with honey, or some say mead. We have never tasted it, but it certainly sounds better than the somewhat wasteful country wine made from mulberries. Much preferable, we say, is mulberry gin, made from equal parts of mulberries and gin, sweetened with about 1 cup of sugar to every 2 cups of liquid and with the addition of a few drops of almond essence. Leave the gin on the berries for several months and then strain off without crushing the berries, which will largely have disintegrated by this time. These gin-flavoured fruits can make an unusual and appetising sauce for a rich meat dish.

*[*Although 'Fruit for the Home and Garden', by Leslie Johns & Violet Stevenson, has been out of print for many years, Granny Smith still has a couple of copies available (item 239F, \$19.95)]*

From the NAFEX mailing list,
<nafex@onelist.com>.

Starting a Mulberry

I've found the perfect mulberry tree for my neighborhood: the fruit tastes great; it bears over a long season rather than all-at-once; and it seems to have more than one crop. This particular tree has been bearing edible fruit for more than a month now [early August 1999].

So my question is how do I start a cutting,

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and when? The tree's not mine, and I see no root sprouts. Can I just take a cutting from a branch tip and bury it in my ground?

Thanks for help.

— Liz

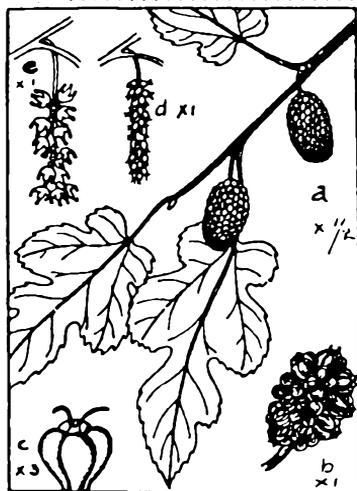
[Elizabeth Berghofer <berghof@adams.net>]

The best time to get cuttings is when the tree is dormant (over winter). Cuttings about 1" [25 mm] diameter are alleged to work best. Store in non-frost-free fridge (or other cold place) in a plastic bag with a slightly damp paper towel. Put out as early in spring as possible.

— Bert [Bert Dunn, Rebacker farm, Tottenham, Ontario <helbert@idirect.com>]

Mulberries as a bird diversion crop

None of my cherries have survived borer decimation long enough to bear yet, but I've got a couple of *Morus rubra* seedlings and several named mulberry selections planted on the property line at that edge of the orchard, in hopes that they'll take the pressure off the cherries (though I'll have to say that I personally prefer mulberries over cherries).



The Mulberry. From 'How to know the Economic Plants', H E Jaques

The *M. rubras* were ripe about the same time as the main crop on the everbearing strawberries, planted between the cherries, and the birds stuck primarily to the mulberries — hardly lost any strawberries to the "feathered rats". While the birds wreaked havoc on the *M. rubra*, they didn't bother 'Illinois Everbearing' very much — I was able to eat the vast majority of them.

— Lucky Pittman

<Lucky.Pittman@murraystate.edu>

Letter from Walter Griesmeir

Enclosed is my membership renewal. Today is my birthday and I am now 71. Let me say that I am very lucky to be a member of WANATCA, and I hope that I can be a member still for a long period. As long as I am alive I will not miss the publications of WANATCA, I learned a lot in the past from Quandong and the Yearbook.

At present I am working chiefly with the

Juglandaceae, especially the hickories, and with the True Service Tree, *Sorbus domestica*. We have selected some sources with extremely good fruit and are just starting to propagate grafted trees for the general public.

The fruits of the True Service Tree are the secret reason why Roman soldiers did not fall sick during their conquest of Europe. We in Germany have some areas where this tree is cultivated (as a cider improver), but in Italy there are huge plantings, with fruit sold in

Italy, Switzerland, Germany, Austria, etc. The main users are the German Jews. They eat the fruit to prevent stomach ailments, with great success.

In former centuries the fruits were more common than they are today, and we hope for a renaissance. The tree grows on lime soils, which must be permeable to water. Its timber is high in price, about twice that of oak or walnut.

This week I got a specimen of the Jujube (*Ziziphus jujuba*) cultivar 'Li'. This cultivar grows in the Rhine Valley and bears very excellent fruit, but I am not sure it will also grow in our nasty climate. We are 200 miles from the Rhine. I am looking for a source of well-bearing cultivars, if you know of a source please let me know.

I hope to come to Australia in 2001 or 2002.

— **Walter Griesmeir**, Carron du Val Strasse 11, D-86161, Augsburg, Germany.

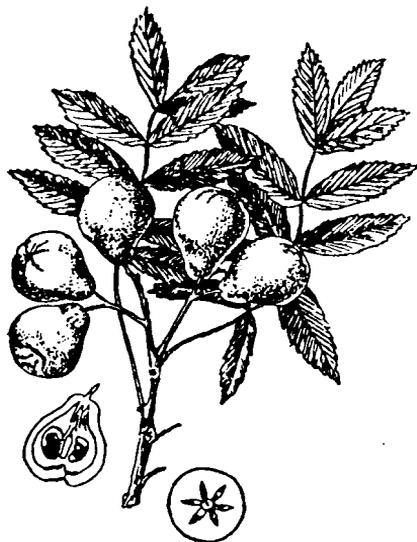
[Ed: The genus *Sorbus* includes about 193 species in the Northern Hemisphere. A relative of the Service Tree familiar to West Europeans is the Rowan or Mountain Ash, *S. aucuparia*, though this is quite different to the Australian Mountain Ash (*Eucalyptus regnans*)].

Jujube in Italy

I am very interested in Jujube, and am compiling a book on this (in English). I would like to buy the Roger Meyer book "Jujube Primer and Sourcebook".

I have a collection of Chinese cultivars of Jujube, including Ruanhemizao, Zanhuanazao, Buluosu, Hamazao, Meimzao, and Hupingzao. Keep in touch.

— **Ferdinando Cossio**, Via Belvedere 62E, 37131 Verona, Italy <cossio@easynet.it>.



True Service Tree, *Sorbus domestica*.
From 'Chastnoe Plodovodstvo' [Speciality Fruits], V A Kolenikov.

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Notes on New Books

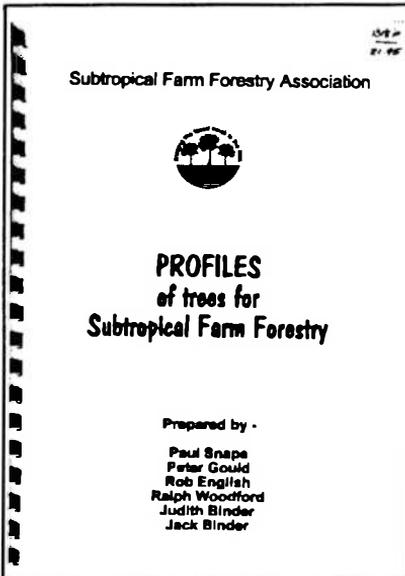
by David Noël

Profiles of Trees for SUBTROPICAL FARM FORESTRY. Prepared by *Paul Snape* et al. Published by Subtropical Farm Forestry Association, 1999. 83p. Spiral. *\$21.95.

This book is a compilation of profiles of the most important Australian timber trees from the east coast of the country, covering about 53 species,

These profiles were originally published in the SFFA Newsletters, which are a valuable information source for anyone interested in growing native Australian timbers.

Each profile gives a description of the species with its uses, growing conditions, and natural distribution, followed by tables of "miller's comments" (size, density, milling, dollar value, drying and shrinkage



characteristics etc) for each.

Many of these timbers are very high value cabinet timbers and this is a valuable and unique source for this expanding industry. The book would have benefitted from an index.

AVOCADO. By *J P Gaillard & J Godefroy*. Published by Macmillan, UK, 1995. 120p. Pb. *\$39.95.

To date we have lacked a good, medium-sized book about the Avocado, suitable for everybody up to the full-time grower. This book, translated from French, fulfils this need.

It provides excellent, comprehensive coverage of all aspects of avocado production, botany, propagation, harvesting, and trade. Highly recommended.



EDIBLE LEAVES of the Tropics. 3ed. *Franklin W Martin* et al. Published by ECHO, USA, 1998. 194p. Pb. *\$29.95.

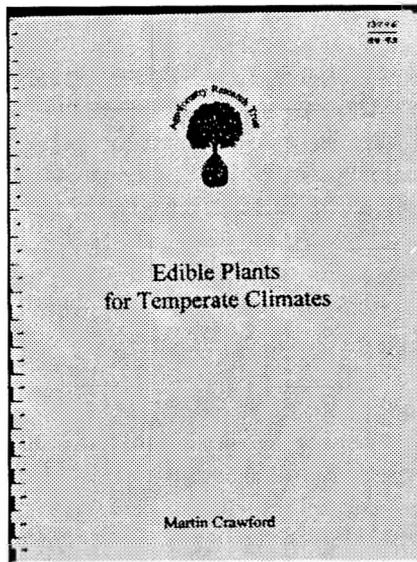
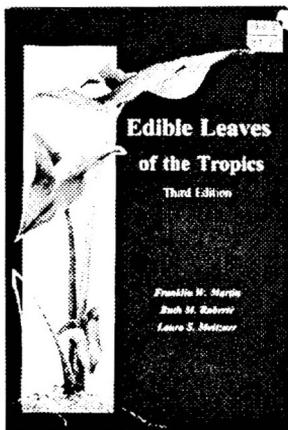
This is a new edition of the tremendously useful sourcebook on tree and other greens which was put out by the US Government in 1975, when Martin was working in Puerto Rico. Both English and Spanish editions existed.

In the 'Western World', we are used to the idea that our salads and vegetables come from a small range of garden plants such as we could grow ourselves in the backyard if we wished. Most of these are Brassicas, in the Cabbage Family.

In the tropics the position is very different.

Local markets carry a range of leaf vegetables, many of which originate from trees.

In places such as Perth, in the sub-tropics, we can have the best of both worlds. A lot of the more than 1500 species in this book already grow or could be grown locally. The problem up till now has been finding out about them.



ECHO are a Christian missionary-support agency which has done wonders to improve local life in resource-poor countries, largely through providing information and support structures beyond the reach of many small governments. They have been particularly concerned with improving nutrition and health, and green-leaf plants can be particularly important here.

At the same time, there is growing concern

with nutrition in Western countries, but these leaf vegetable resources are greatly under-utilized. Highly recommended.

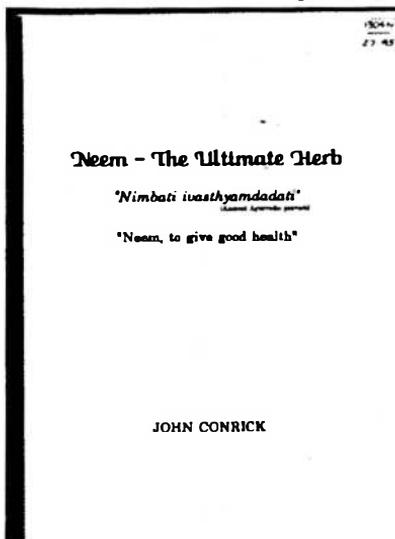
EDIBLE Plants for TEMPERATE Climates. 2ed. *Martin Crawford* (UK, 1998). 218p. Spiral. *\$58.95.

Tremendous resource book for those in cooler climates - 4,500 species in detailed tables giving edible parts, hardiness, cropping performance, growing conditions etc. From the Agroforestry Research Trust (WANATCA members). Recommended.

NEEM - The Ultimate HERB. *John Conrick* (USA, 1999). 64p. Pb. *\$27.95.

The Indian book *Miracles of Neem Tree* gave a comprehensive survey of the myriad uses of extracts from the Neem tree in traditional medicine. Now John Conrick has prepared this comprehensive, literature-backed review which draws on modern scientific sources and tests. Recommended.

* Prices at Granny Smith's Bookshop (see ad p. 31)



Trees, salt, and money

Here in Australia we are moving inexorably towards a major revolution in how we occupy, use, treat, and make money from the land.

We exist at the nexus of major forces, major pressures, major concerns. These include the increasing takeover of agricultural land by salt; concern with the greenhouse effect; maintaining and improving the environment; possible increasing demands on limited supplies of water; and the need to alter our agriculture to move into sustainable practices which are economic.

Economic practices, not just in the sense of providing a living, but in doing this and also generating enough excess to heal our land and improve its future. A challenge indeed.

Nowhere are these challenges more pressing than in Western Australia, with the most rapidly-increasing salinity problem in the world. How fortunate, then, that we have at our disposal the Tree Crops Approach, with the ability to tackle all the above problems in an integrated, sustainable manner.

Of course our present tools are still relatively crude, with much development needed, but we can share a vision of how we might work together and show the world the way. In this section we look at some of the early steps in this process.

[Countryman / 1999 Sep 16]

WA leads nation in tree farming: report

Western Australia leads the nation in establishing tree crops on farms, according to a Bureau of Rural Sciences report.

The report — the interim update of the National Plantation Inventory — shows that between 1994 and 1998 the area of tree crops in WA grew from 130,845 to 212,304 hectares, an increase of 81,459 ha.

Department of Conservation and Land Management executive director, Dr Syd Shea, said this meant that WA's tree crops program was progressing three times faster than the average of other States and Territories.

The report shows that WA's tree crops program has expanded by an average of 20,365 ha a year over the past four years. This compares with an average annual increase across all States and Territories of around 7000 ha in the same period.

"Given the burgeoning interest in maritime pines as a tree crop on cleared farmland in the medium rainfall zone, it is expected that WA will remain the nation's leader in establishing new areas under tree crops," Dr Shea said.

"WA is well underway to achieve more than its share of the national '2020 Vision' to treble tree crops by the year 2020."

He said the growth in WA's tree crops industry was unique in that the increase in large part was because farmers recognised that commercial tree crops were necessary to combat land degradation, particularly soil and stream salinity.

CALM is heavily involved in tree crop sharefarming. A pilot scheme, featuring blue gums in higher rainfall areas, took off in 1981

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with 1551 ha belonging to 21 farmers.

A decade later, after hundreds of farmers had joined, there was 100,000 ha and blue gums had founded a multi-million dollar export trade.

CALM launched maritime pine sharefarming in 1994 and farmers from Badgingarra to Esperance are watching productive tree crops grow on some of their least productive land, without incurring any costs.

CALM is aiming to plant 150,000 ha of maritime pines over ten years, supported by an \$18 million per year contribution from the State Government.

The drought resistant maritime pine takes tree crop sharefarming into the medium rainfall (400-600 mm) zone and, although it will grow on fertile soils, it thrives on infertile sands.

The pines play valuable environmental roles: decreasing erosion, lowering groundwater, combatting waterlogging and salinity, creating shade and shelter for stock or adjacent crops, minimising runoff, reducing leached nutrients that pollute waterways and aesthetically transforming barren tracts.

Today's superior maritime pine results from more than 70 years breeding by CALM and its predecessors. CALM established a nursery at Manjimup in 1989 which meets all WA's maritime pine plantation needs.

Its seedlings produce straight trees with smaller branches, vigorous growth and stands of uniform quality, for efficient management and harvesting.

Under CALM's sharefarming scheme, originally developed with the WA Farmers Federation, a landowner enters into a legal



CALM Sharefarms officer Owen Donovan inspects a maritime pine plantation

contract with the investor (CALM), allowing part of his/her land to be used for commercial tree crops.

If the landowner sells the property, the investor's rights are secure. Commercial returns on the crop are divided between investor and landowner, proportionate to input.

[Countryman / 1999 Sep 16]

CALM in call for regular planting

CALM'S John Bartle believes planting trees ad-hoc for landcare is inadequate and they need to become a staple in broadacre agriculture with returns as attractive as wheat.

He said Australia had an inadequate commitment to developing commercial trees that were a viable alternative to annual cropping.

Mr Bartle said the Wheatbelt needed trees that had short harvest intervals so they could

fit into existing crop rotations and the floodgate should be opened to research as many perennial species as possible.

"I am talking about millions of hectares of tree crop planting that can be managed extensively, as opposed to intensively run horticultural plantations of trees such as olives," he said.

"Tree crop options at present are thin and strongly biased to high rainfall areas.

"In the Wheatbelt and other drier areas of WA with less than 400 mm of rainfall there is only oil mallees."

Mr Bartle said short harvest trees could offer Wheatbelt farmers big opportunities in markets for panel board and other reconstituted wool products wood and cement cladding, sawn wood, craft wood, resins, gums, oils, charcoal and other energy uses.

[Weekend Australian / 1999 Oct 23-24]

Farmers plant trees and reap cash

West Australian environmental authorities are paying farmers to turn salt-

affected lands into forests.

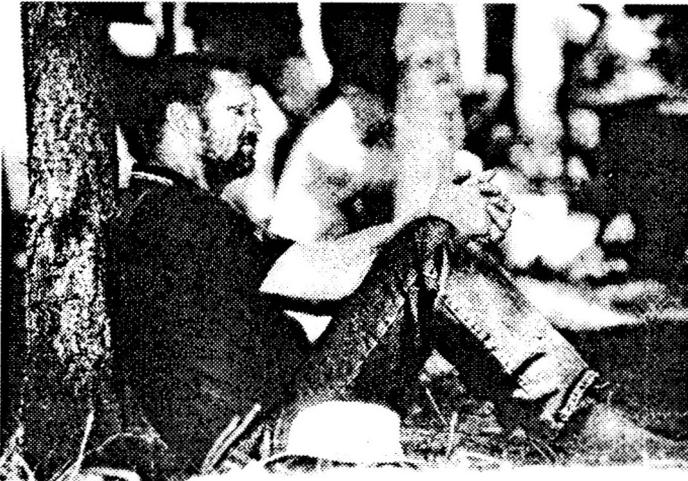
In a national first, the Department of Conservation and Land Management is paying farmers up to \$200 a hectare to plant pine plantations. CALM is boasting the timber crop will help fix salinity problems, eat greenhouse gases and eventually give farmers an alternative income.

Launching the scheme yesterday in the wheatbelt town of Moora, CALM director Syd Shea was excited about the prospect of pine plantations dotting the West Australian farmscape.

"This won't solve the problem but it will go a long way in stabilising it. And if we play it right, it will produce a another cash crop in a time when farmers need to diversify," he said.

"Unless we make this project commercial, it will not continue."

Moora farmer Marty van Beek has 75 ha of pines on his 1500 ha property. Hoping to reap cash and landcare benefits, he will put in another 200 ha this year.



"We've been wanting to put more pines in but under the old agreement it wasn't financially attractive. With the new deal we get money up front, money to fence it off and landcare benefits," he said.

"The main reason we are doing this is to combat the rising water table and salinity. But it will allow most farmers to pay off core debts and put them in a better financial position."

A decent earner: Mr van Beek leans on an investment at Moora yesterday. Picture: Andy Tyndall

Western Australia

accounts for more than 70 per cent of the nation's dryland salinity areas, with 1.8 million hectares of salt-affected farmland.

Trials have shown original ground water levels can be restored by revegetating 30 per cent of the landscape with perennial crops.

— *Candice Silverman*

[Weekend Australian / 1999 Oct 23-24]

Primary industry under assault Undrinkable water and a \$100bn economic mess

Rising salt levels in the nation's food bowl would cost the country \$100 billion next century and leave hundreds of thousands of Australians without drinkable water.

Rivers in the Murray-Darling Basin will become so salt-ridden within 50 years that the water will be rendered unfit for humans and unusable for irrigating many crops, a joint state-federal salinity audit, released yesterday, reveals.

"This is the worst environmental problem Australia faces," Environment Minister Robert Hill warned yesterday at the launch of the Murray-Darling Basin Commission's 1999 salinity audit.

The report predicts the Lower Murray, which services Adelaide, will be too salty to provide drinking water by 2050.

Similarly, the Macquarie, which provides 70,000 people across 12 rural NSW communities with drinking water, and others such as the Lachlan and Namoi, will soon become unusable.

Already, two Victorian rivers, the Avoca and Loddon, have reached the 800 EC level, the international salinity standard making water unfit for human consumption.

Land clearing from Queensland down to Victoria and west to South Australia means that up to 15 million hectares of the best agricultural land is likely to be salt-affected by 2050, a CSIRO report released concurrently finds.

Native vegetation that once soaked up the saltwater has been cleared by traditional farming practices. That has caused a rise in the groundwater table, bringing natural salt to the surface and from there into the basin's rivers.

"Across the basin in 100 years' time the total regional infrastructure costs (agricultural losses, road and building repair) could reach \$1 billion a year if we don't change anything," said Kevin Goss, Murray-Darling Basin Commission general manager natural resources.

Senator Hill demanded that NSW and Queensland do more to address the amount of land clearing they still allow to occur, despite the level of understanding of its environmental impact — a concern echoed by the Australian Conservation Foundation (ACF).

"The only real hope of halting the spread of salinity is to plant trees on a very large scale. This could mean revegetation of up to 70-80 per cent of the landscape," ACF campaigner Tim Fisher said. "Trees and shrubs must become a normal part of farming."

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If you have not been informed of the current meeting by e-mail, it is because we do not have a correct e-mail address for you.

Notify us of your e-mail by sending to:

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Leith Bouilly — a Queensland grower of beef, wool and cotton, and a member of the audit's community consultation committee — said the basin's rural communities understood the scale of the salinity problem, but were unsure who should bear the financial brunt of trying to fix it.

"The debate has to be had. There are public good outcomes and private good outcomes, so the private sector should be responsible for the second, but governments on behalf of the people are responsible for the first," Mrs Bouilly said.

— *Stephen Lunn*

[*The Australian / 1999 Oct 16-17*]

Ministers join forces in salinity battle

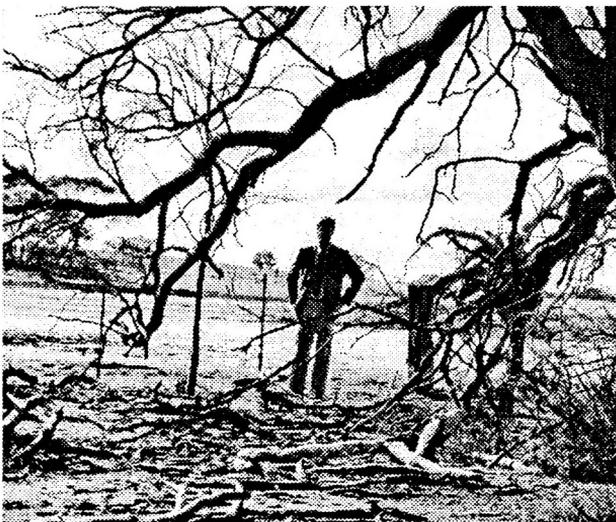
NSW ministers for Agriculture and Land and Water Conservation and Forestry signed a memorandum of understanding to fight the devastating effects of dry-land salinity last week.

The memorandum follows the announcement that NSW will host a salinity summit in February.

Dry-land salinity is caused when salt rises from deep beneath the surface, where it has been residing for millions of years.

Before vast areas of land were cleared, rainfall would seep into the soil, some of it being drawn on by deep-rooted trees and some continuing into catchment areas before flowing into rivers.

Once the trees are felled, the water-pumping process is removed, so the water table starts rising, bringing the salt towards



Dead gum trees in the NSW Riverland, killed by salinity

the surface.

This salt is then washed into the river systems, damaging fragile freshwater ecosystems and affecting the water that is used downstream for irrigating crops.

The key to ending dry-land salinity problems is to reforest the catchment areas with deep-rooted trees.

According to the memorandum, some of these catchments will have to have 50 per cent of their areas reforested.

The memorandum also sees the launch of the Farm Forestry Advisory Unit, which will advise farmers of the options for planting trees on their land to gain maximum economic benefit.

Minister for Forestry, Kim Yeadon, says up to 50 demonstration tree plantings will be established in problem areas around the State.

"The trial program will help identify the amount of trees which need to be planted in each catchment," Mr Yeadon says.

"Regional programs can then be developed

with investment packages for rural landholders interested in establishing plantations for commercial and environmental returns.”

Mike Curll, from NSW Agriculture, says the memorandum locks agencies such as NSW State Forests, the Department of Water Conservation and the Department of Agriculture into providing a single and non-conflicting message to farmers about salinity and the benefits of reforestation.

Dr Curll was involved in setting up the unit based in the north-west NSW town of Tamworth.

He says the Murray Darling Basin Salinity Audit, to be released next Friday, suggests NSW is facing a “severe” salinity problem, with up to 12.5 million hectares to be affected

in the next 20 years.

Dr Curll says the unit hopes to provide advice about the best way to deal with the salinity problem.

“Farmers can say: ‘I want to put this portion of my property into forests. How does this affect the rest of my farm, what sort of income stream can I get?’” he says.

Timber harvesting is one of the benefits of farm forestry with the increasing scarcity of old-growth forests and the projected increases in export markets for Australian timber.

There is also the potential to trade in carbon rights, which have been introduced globally to combat the greenhouse effect.

— *Barclay Crawford*

[SGAP (Society for Growing Australian Plants) Queensland Region Bulletin / 1999 Jun]

The Cedar Bay Cherry, *Eugenia reinwardtiana*— A great bush tucker prospect

Many older members of SGAP would remember a time when all the Lillypillies were known as *Eugenia*. During the 1980s, this was revised and the whole group were split up, into *Syzygium* and *Acmena*. Only one solitary plant remained in *Eugenia* and that was the Cedar Bay Cherry.

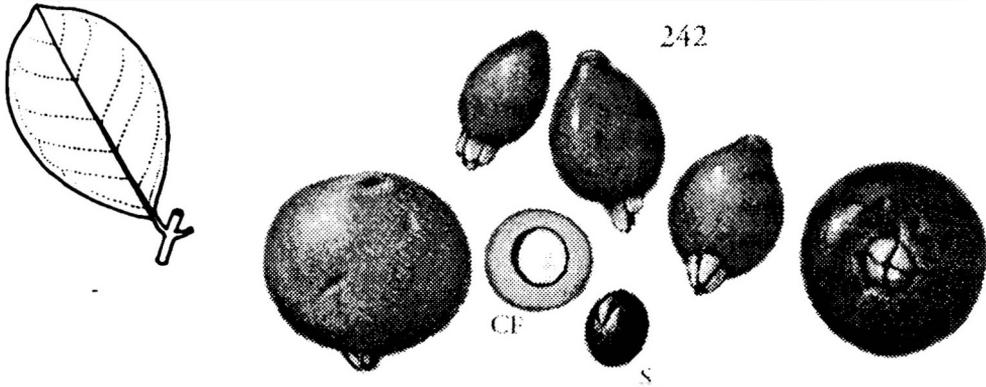
Of course there are still about 1000 *Eugenia*s in other parts of the world; most familiar to many home gardeners is the Brazilian Cherry (*Eugenia uniflora*), or possibly even the Grumichama (*Eugenia brasiliensis*). Our native *Eugenia* has also undergone a name change. Formerly *Eugenia carissioides*, it is now known as *E. reinwardtiana*.

Enough of the technical aspects now. The name “Cedar Bay Cherry” obviously derives from the fact that it is a common shrub at Cedar Bay in the Daintree area, but it is by no means confined to there. Indeed, they may be found anywhere from Bundaberg to the Torres

Strait and into Papua New Guinea and many other countries as well.

It grows in many forms and many habitats, although usually as a low bush or small tree. On off-shore islands, rocky headlands and protected beach fronts, it is possible to find the cherry growing. It also occurs along dry creek beds in association with deciduous vine thicket or dry rainforest species.

The leaves are opposite and when crushed, exude that apple sort of smell so common with members of the family Myrtaceae. The flowers are white and delicate, with a small tuft of fine stamens growing from the centre. These are produced sporadically over the plant and are



Leaf and Fruits of Cedar Bay or Beach Cherry, Eugenia reinwardtiana. From Wendy & William Cooper's marvellous book, 'Fruits of the Rain Forest: A guide to Fruits in Australian Tropical Rain Forests' (Granny Smith 826F, \$75.00).

followed by a sweet edible fruit.

The size, taste, colour and texture of the fruit vary to such a degree that many people are convinced that more than one species must be involved. Those from the northern rainforest and Cape York Peninsula areas have large, fleshy leaves and a bright red globular fruit, varying in size from a cherry pip to the size of a cumquat.

Local vine-thicket varieties from the Townsville-Bowen area have very thin, small leaves, while the fruit is bright orange, often elongated and tear-shaped. They have more than a passing resemblance to some very nasty chillies I have eaten in the past.

The Cedar Bay Cherry is now attracting a large amount of interest from general home gardeners as well as diehard native plant enthusiasts. Many believe that this plant has great potential for the exotic fruit and bush tucker markets because of the eating quality of the fruit.

Personally, I have about fifteen adult plants in cultivation from which I regularly gather fruit. The largest and most spectacular fruiter was one I actually purchased from the fruit

tree section of the local nursery. Realising the importance of experimenting with as many different varieties as possible, I have plants in from around north Queensland and have just planted over 100 seeds of the unusual Townsville variety.

I am looking for all the variations of fruit size, seed size and flavour. Perhaps there is the possibility of grafting the superior fruiting variety from the wet tropics to the hardier rootstock of our local variety. I had considered grafting Cedar Bay Cherry onto Brazilian Cherry, but who could be so mean to a Cedar Bay Cherry?

This plant is certain to become one of the most popular native shrubs and bush tucker plants in cultivation in the Townsville area and it should be heavily promoted.

— Greg Calvert

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[Countryman / 1999 Oct 21]

New breeding method to cut variety release time

Revolutionary double haploid breeding technology being used in WA will cut three years off the traditional 12 years taken for new barley and wheat varieties to be released to farmers.

Double haploids are plants made from haploid plant cells produced without fertilisation through tissue culture. These plants are treated to double the amount of chromosomes they carry and become fully fertile, 100 percent true breeding lines. The process takes about 12 months and eliminates the need for the first four or five years of a traditional breeding



Sue Broughton

program. Agriculture WA researcher Sue Broughton said the double haploid technology was first employed in WA in 1993 for barley breeding, which was simpler than wheat. She said the double haploid process was very labour intensive and relatively expensive at \$10 a plant but she expected the use of the technology would grow in the future.

"We are trying to use the world's best technology in this area and WA is up there with other global users."

[Ed: Here is a powerful method which could revolutionize breeding and selection of improved fruit and nut trees. Plants contain a full twin set of chromosomes, when pollen is made each grain contains only a half set, selected at random from the full number. Treating the pollen to double its chromosome number produces a normal plant in which both chromosome sets are identical and therefore breed true. In ordinary plants, most chromosomes differ from their twin partners and hence lead to inheritance variations.]

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1318P * Profiles of Trees for SUBTROPICAL FARM FORESTRY. (Aus. 1999) 83p. Sp. Long-awaited sourcebook on most important Australian timber trees (ca 53 species), with miller's comments (size, density, milling, \$ value, drying etc) for each. Recommended \$21.95

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CALENDAR OF FORTHCOMING EVENTS

Deadline for next issue: Apr 20

2000

- Feb 15 Tue **General Meeting** (Phil Bellamy - Making Money from Planting Trees in the Dryland Wheatbelt)
- Mar 25 Sat *Festival of Trees (Men of the Trees), Hazelmerre
- Apr 4 Tue Executive Committee Meeting
- Apr 15 Sat *Balingup Small Farm Field Day
- May 16 Tue **General Meeting**
- Aug 15 Tue **General Meeting**
- Aug 26 Sat *Agroforestry Field Day, Boyup Brook
- Aug 29-31 *Dowerin Field Days
- Nov 14 Tue **Annual General Meeting**

2001

Apr 13-20 **ACOTANC-2001 Conference, Perth**

*General Meetings are held starting at 7.30pm. Venue: Theatre Room, Kings Park HQ, West Perth. These meetings usually include a current magazine display.

- Event with WANATCA participation; § For contact details refer to the Tree Crops Centre.

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Current Subscription Rate: \$50.00 per year
(includes all publications for the year). Student Rate: \$25.00

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