



QUANDONG

ISSN 0312-8989

Volume 2 No. 3

NOVEMBER 1976

40c

Newsletter of **WANS** the West Australian Nutgrowing Society

The next meeting of the Society will be a field trip to David Noel's bush property near Dwellingup. Dwellingup is about 75 miles from Perth along sealed roads, via Pinjarra, slightly less along a gravel road which branches off the South-West Highway at North Dandalup (not recommended unless you are used to gravel roads). A map and details of times and arrangements are given below.

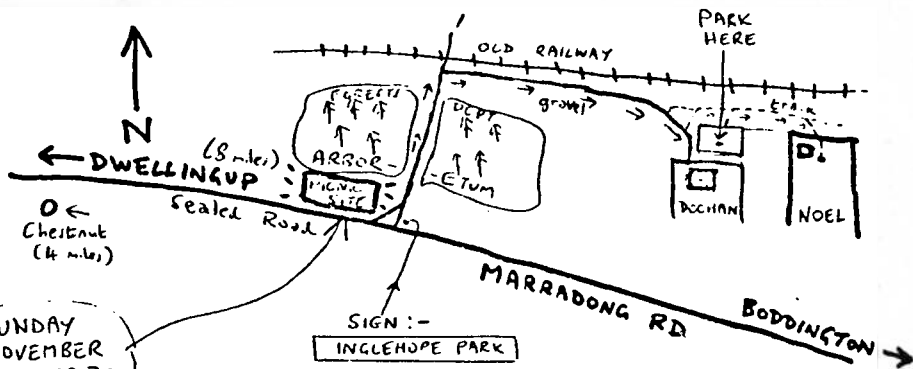
This property is a long way from being a model nut orchard, but it does show that quite good nut trees can be grown with little attention, provided care is taken at planting and simple precautions against animal attack are taken. The trees are not watered at all except at the time of planting.

If you go on this trip, look out for the large chestnut tree shown on the back cover. It is on the right, opposite a place littered with old cars, just past a creek bridge and 4 miles East of Dwellingup Post Office.

NUTGROWERS PICNIC -- SUNDAY NOVEMBER 28

Take the Dwellingup road, East from Pinjarra on the South-West Highway, or West from Boddington, near the Albany Highway. About 8 miles east of Dwellingup is Inglehope Park, a Forests Dept. area with Barbecue site, Arboretum, Nature Trail etc. - clearly marked. Meet at the Barbecue Area at 12.30 pm. Journey time from Perth, about 2 hours.

After a picnic at the Barbecue site, we will drive about half a mile, to park on the paddock in front of Doohan's Place. Then walk about 200 yards along the track to David's place (marked by an asbestos garage serving as an agricultural shed), arriving there around 2.00 pm.



SUNDAY
NOVEMBER
28. 12-30

QUANDONG

is edited by David Noel and is the Official Newsletter of the

WEST AUSTRALIAN NUTGROWING SOCIETY

PO Box 27 Subiaco WA 6008

WANS

Material may be reprinted or reproduced from WANS publications provided its source is fully acknowledged

BOARD OF DIRECTORS OF THE SOCIETY

Peter Good (President), 414741; Paul Sinclair (Vice-President), 865519; Mrs Carolyn Blackwell (Secretary-Treasurer), Lot 9, Spring Road, Robbystone 6111, tel. 955036; David Noel (Publications Editor), 98 Herbert Rd, Shenton Park, 811139; Edmund Czechowski, PO Box 12, Wanneroo 6065.

CONVENORS

CASHEWS - Derek White, PO Box 249, Kununurra 6743
INVESTMENT & TAXATION - Edmund Czechowski, PO Box 12, Wanneroo
LITTLE-KNOWN NUTS - David Noel (811139)
MARKETING - John Mercer, 45 Bridgewater Drive Kallaroo (926031)
NUTRITION - Alex Sas, 52 Croydon Rd Roleystone (250101 xt 2155)
TASMANIA - Bill Mollison, 316a Strickland Ave, South Hobart
TREE SUPPLY - Tim Lynn-Robinson (921852)

SOCIETY PUBLICATIONS

WANS publishes a newsletter QUANDONG 3-4 times a year, devoted to news of meetings and events, details of tree and seed sources, notes on books and leaflets about nuts, reprinted short articles about nuts, and other items of interest. The major publication is the annual WANS YEARBOOK, which contains articles drawn from Australia and overseas, covering any aspect of nut horticulture and production, and is regarded as an important research journal in this area.

Members subscribe for the Calendar Year, and receive one copy of all Society publications issued in that year as a subscription benefit.

BACK NUMBERS

WANS began publishing in 1975. Back sets of 1975 publications (3 issues of Quandong and the 1975 Yearbook) are available still to members at a cost of \$5.00. Contact the Secretary for back numbers. The cost of a set of 1976 publications (same as subscription) is \$8.00.

MEMBERSHIP DETAILS

Any person or organization interested in the growing or production of nuts may apply for membership. Members are welcomed from outside Western Australia and overseas, as well as in W.A. Write to P.O. Box 27, Subiaco, W.A. 6008, Australia, or to the Secretary as above.

WANSO

Members of the Society own a co-operative, West Australian Nut Supplies Co-operative Limited, a legally registered Co-operative Company set up to buy and sell nuts and nut products. Shares in the WANSO co-operative are sold only to WANS members, each of whom is entitled by the Articles to apply for and hold between 10 and 100 shares of \$1.00 each. Members wishing to acquire WANSO shares (currently available at par, i.e. \$1.00 each) should write to WANSO Secretary and Director, Edmund Czechowski, at PO Box 12, Wanneroo, W.A. 6065. WANSO will always endeavour to sell nuts produced by members, or supply nuts needed by members. Enquiries should be directed in the first instance to Cattie Ruben, 1d Violet Grove, Shenton Park, WA 6008 (tel. (092)-811579) for all trading needs.

FITZROY

NURSERIES

(Reg'd.)

Telephone: 6 2194

Selected
Roses,
Fruit Trees,
Flowering and
Ornamental
Shrubs and
Trees

PINK LILY, ROCKHAMPTON, QLD., 4700

MACAMIA CULTURE

Address all Correspondence to:
P.O. Box 859, ROCKHAMPTON.

GRAFTED MACADAMIA

When Princess Alexandra was on her way to Australia in 1959 she had her airliner delayed a few extra minutes at Honolulu. She didn't want to see the rolling surf or Waikiki; she didn't want to hear the wailing Hawaiian music; she didn't want a floral lei. Her Royal Highness simply wanted an ice-cream - a Macadamia nut flavoured ice-cream, a Hawaiian speciality. A policeman obligingly ran off to buy it and the incident made world headlines. It was good publicity for Hawaii where the Macadamia nuts are one of the principal crops.

It was interesting news, too, for a number of prospective growers and an encouragement to Nurserymen who were and still are determined that the next time Princess Alexandra visits Australia she will be able to have Macadamia nut ice-cream here. They see the Macadamia as a potential dollar earner, for the U.S.A. cannot get enough from Hawaii.

The development of the Macadamia Nut as a commercial crop in Hawaii is the more remarkable by reason of the fact that the genus is there introduced subject, the entire genus is native to the eastern states of Australia - Queensland and New South Wales. It was first discovered in the 60's of last century; recorded as Macadamia ternifolia; and named in honour of Dr. John Macadam, Secretary of the Philosophical Institute, Victoria, Australia. The specific name indicates the leaf arrangement - in whorls of three. Macadamia is included in the important plant family Proteaceae. It is known by the vernacular names Queensland Nut; Bopple Nut; Bush Nut etc. Very soon after its discovery the quality of the Nuts attracted attention, and the Macadamia came into general cultivation here and elsewhere on account of the beauty of the tree and the excellence of its Nuts.

One of the defects in the nuts gathered from the naturally growing trees, and those in early cultivation, was to be found in the toughness of the outer shell. Actually this is not serious from the commercial nor even from the Home growers point of view. Following the introduction of selected grafted trees and with the further introduction of more effective methods of handling the nuts, this defect disappears.

From the beginning of its cultivation a great deal of work has been done towards the improvement of the productivity of the trees. A couple of odd species of inferior quality have been disregarded and the better species have been developed.

At present two distinct and valuable types have been established.

1. Macadamia integrifolia - in line with the original species ternifolia - having the leaves arranged in whorls of three with smooth edges mainly from Queensland.
2. Macadamia tetraphylla - mainly from New South Wales sources, with the leaves arranged in whorls of four, with prickly edges. The young foliage having an attractive reddish colouring.

The total Australian production is limited and comes mostly from odd trees grown as a side-line on orchards and banana plantations; mainly to utilize some of the unproductive and more rugged areas of the plantations. Most nuts have been bought and processed by a Brisbane firm and sold in Brisbane and Sydney, but the eagerness with which they have been snapped up indicates to these growers that there is a big potential Australian market.

This prospect has been further encouraged during the last few years by the successful production of grafted trees at our Nurseries. The advantage of grafted trees lies in the fact that they will produce nuts at an earlier age of uniform size and thinness of shell, as well as an increased yield, thus making the growing of these grafted trees a more profitable concern for the grower and an easier task for the processing factories.

A good recovery rate is from 32% kernel from each nut and, at present prices this should return the grower more than 20¢ per pound gross (kernel and shell). Processing companies make their payments on the recovery rate only. The manager of the largest of these processing factories, at Brisbane, Queensland, said that the industry was, just now, scratching the surface as far as commercial production goes.

The area a grower chooses to establish his nut grove is also important. It should be reasonably level to enable the grower to use machinery as the area must be kept clean of grass and weeds at harvesting time. Trees should be spaced from 25 ft. to 35 ft. apart as they grow 30 - 35 ft. and have a dense canopy of leaves. One novel and rewarding method is to plant alternate nut and citrus trees at 15 ft. intervals in rows 15 ft. apart, or vegetable crops.

Macadamia nut trees come into production after three or four years but this is not of commercial quantity. The yield increases noticeably each year and commercial production is reached in ten to twelve years, as compared with citrus trees which reach full production after about seven years; but Macadamia nut orchards produce for, at least, twice as long as citrus orchards. A fully grown Macadamia tree with proper care should produce 100 to 150 lb. of nuts per annum.

PESTS: The Macadamia Nut is subject to attack from several pests. Some, such as the fruit spotting bug, the nut borer and the flower eating caterpillar are responsible for considerable loss of crop. It would appear, therefore, that commercial orchards of the future must be so laid out that spray equipment can be used to control them.

When a nut is ripe it falls to the ground and harvesting is effected by raking or collecting the nuts every 7 to 10 days. The nuts grow inside a husk and with some species it is necessary to get rid of this mechanically. There are no packing problems and the nuts can be stored for long periods. It is sufficient to despatch the nuts in ordinary sack bags.

Fitzroy Nurseries have the plants, which are 18" - 24" high, established in easy to remove 7 lb. plastic containers. When planting just cut away the plastic containers leaving the soil surrounding the roots exposed. This root-ball must not be disturbed. It is then placed into its permanent position and natural soil is firmed well around the root-ball. Under no circumstances should organic matter such as manure, be placed in the hole. However, it can be spread over the surface and incorporated with the soil. It is wise to stake the trees if they are likely to be blown about.

The Choice of Varieties. We have based our selection of varieties on local and Hawaiian experience and the trend is to stick to varieties with a below 40% recovery rate.

Too many growers are after extra thin shelled varieties, that is, over 40% recovery rate. Every grower should realise that any Macadamia variety with a recovery rate exceeding 40% will have a percentage of nuts germinating on the trees and especially on the ground prior to being collected. Germination and interference by insects with the kernel prior to processing will render the kernel useless, this in turn reduces the value of the crop from such a variety. Consequently varieties with a recovery rate higher than 40% should not be planted in very humid areas.

We have had several opportunities to inspect the processing plant in Brisbane and on each occasion the extra thin shell types (mainly *tetraphylla* seedlings) had a large percentage of discoloured kernels. Hawaiian growers use 30% to 40% recovery rate.

While varieties with an extra high recovery rate are desirable, a grower should not overlook the abovementioned facts.

Fitzroy Nurseries assure anyone planting these grafted nuts of definite good yields. There is never likely to be an over-supply of trees as they are so difficult to-graft. Both processing and table varieties, grafted from trees selected by the Dept. of Agriculture and Stock, are available.

If the trees are planted correctly the grower should not incur a single loss.

Macadamia trees supplied by Fitzroy Nurseries to various growers in many areas in New South Wales and Queensland in the past have done exceptionally well.

Trees are usually packed into special despatch cartons in lots of 6. The cartons are 27" high and 18" by 12" at the base. They will travel safely and cheaply by goods train to anywhere in Queensland and New South Wales, and to other States, bare-root by air in winter only.

THE EXPERIENCE GAINED AT THE FITZROY NUTSERIES AND ELSEWHERE INDICATES THAT BETTER RESULTS ARE SECURED FOLLOWING THE PLANTING OF MACADAMIA INTEGRIFOLIA SELECTIONS.

NOTES ON THE MACADAMIA

(Prepared by the Queensland Department of Agriculture and Stock)

TYPES:

There are two distinct types of Macadamia, namely the tetraphylla and the integrifolia.

The tetraphylla is a native of northern New South Wales and is characterised by its spiny leaves and its rough shelled, slightly elliptical nuts. In addition the young leaves of this species are purple or reddish in colour and the flowers pink.

The integrifolia on the other hand is found mainly in southern Queensland. It has a smoother leaf and bears a round, or nearly round, smooth nut. Also, with this species the young leaves are pale green or bronze and the flowers creamy white.

Some years ago, a survey was made of established plantings and a number of promising types of both species were selected. These types were subsequently tested for their processing quality and selected further on this basis. The result is that we now have a dozen or so selections which, although there are no mature plantings of them, they nevertheless show promise of being worthwhile commercial varieties.

The processing tests referred to above have also established that although the tetraphylla types, as a whole, bear thinner shelled nuts and therefore tend to produce higher kernel yields, the quality of the processed product is not as good as with the generally thicker shelled integrifolia types. In addition, thin shelled nuts have a tendency to germinate prematurely and are more susceptible to bug and grub damage, therefore, it is recommended at this stage that the integrifolia selections be planted in preference to the tetraphylla.

THE NEED FOR GRAFTED PLANTS:

Unfortunately cross pollination occurs very freely in the Macadamia. Most of the commercial orchards which are now in bearing were originally established from seedling trees and it is obvious from these that even where seed was selected in the first place from high yielding trees with good quality nuts, the performance of their progeny has been very variable. The majority of these seedling orchards would contain less than 10% of trees acceptable by current standards.

It is apparent therefore that a sound commercial planting must be based on trees propagated by some vegetative means.

BRIEF GUIDE TO ORCHARD ESTABLISHMENT AND MANAGEMENT:

1. Macadamias will grow satisfactory on a variety of soils, but will do best on a well drained friable soil $2\frac{1}{2}$ to 3 feet deep.
2. Trees are very drought tolerant once they are well established but require at least 45 inches of well distributed rainfall and/or irrigation per year for good production.

3. Windy situations should be avoided as trees are very prone to splitting in the crotch. Where possible, windbreaks should always be provided.
4. Trees should be planted at least 35 feet apart on good soils and 30 feet apart on poorer soils. Rectangular plantings with trees 35 feet apart between the rows and 20 to 25 ft. apart in the rows should also prove satisfactory and result in higher yields when the orchard is young.
5. Care is necessary with transplanting. Avoid hot dry periods.
6. Train young trees so that branches originate at different heights on the trunk. If this is not done a very weak crotch will result.
7. Keep the orchard free of weeds. The trees are shallow rooted, therefore don't cultivate deeply in the root zone. P.C.P. and oil sprays can be used safely for weed control.
8. Fertilize in early winter and early summer. In winter, apply a 10:8:7 mixture at the rate of $\frac{1}{4}$ lb. per tree per year of age up to maximum of 10 lb. In summer apply this same mixture at half the above rate.
9. Control pests by applying 0.2% D.D.T. sprays at flowering and also at other times of the year if pest damage becomes evident.
10. Gather the nuts every 2 weeks if the weather is dry, or more often if conditions are humid. Harvesting will be facilitated if the area under the trees is kept free of weeds and leaves.
11. Husk the nuts within a few days of harvesting and allow them to dry on racks under shelter for 2 to 3 weeks before despatch.

PROSPECTS FOR THE INDUSTRY:

The Macadamia is a nut of exceptional quality. At this stage, only a fraction of the potential market for it has been exploited, therefore there is still ample room for expansion of the industry.

VARIETIES GENERALLY STOCKED by Fitzroy Nurseries:

Variety	Recorded as	Origin	Species	Recovery rate
Keakea	508	Hawaiian	Integrifolia	35% to 39%
Keauhou	246	"	"	36% to 40%
Tkaika	333	"	"	31% to 35%
Keaau	660	"	"	40% to 45%
Hinde	H2	Queensland	"	30% to 34%
Schimke	S1	"	"	30% to 34%
Own Choice		"	"	32% to 36%
Renown		"	Tetraphylla	38% to 42%
Hybrid Rankin		"	Hybrid	24% to 38%
Nutty Glen		"	"	44% to 48%

NUT TREE VARIETIES IN AUSTRALIA . 3

This list completes the extracts on Nuts taken from R. Ikin's list (see QUANDONG 2(1) for details. Macadamia varieties are often referred to by code number; where known, this is given to the left of the name. As before, H = Dept. Health; C = CSIRO; N, Q, S, T, V, W = State Agric. Depts.

6.5 Queensland Nut (Macadamia integrifolia)

- Goldsmith Q
- H2 Hinde CNWQ
- Hybrid Kankine Q
- 333 Ikaika CQ
- 508 Kakea CNWQ
- 246 Keauhou CNWQ
- 660 Keau Q
- Mac Fred Q
- NG Nutty Glen Hybrid CQ
- Oakhurst Q
- Own Choice NQ
- Pahu Q
- Probert Q
- R.I. Q
- D4 REN Rencwn CWQ
- B5 Rickard CNWQ
- S1 Schinke CWQ
- Teddington Q
- B6 Tinana CNWQ

- Macadamia minor C
- Macadamia ternifolia W

6.10.1 Pistachio

open pollinated seedlings of:

- Badami C
- Ghafuri C
- Green Ghazvin C
- Hazel Shaped Ghazvin C
- Kaz N
- Kaleguchi C
- Microcarpa C
- Red Aleppo C
- Small C
- Trabonello C N

grafted signs:-

- Bronte CNS
- Kerman C
- Lassen C
- Peters Male C

6.6 (Macadamia tetraphylla)

- D8 Azamoor NQ
- Colliston Q
- Collard NQ
- Ebony Q
- D3 Eggshell C
- F1 Elicbah Q
- Frederikson N
- G5 Q
- D4 Greber NQ
- Howard Q
- NG & N7 Q
- Rankin NQ
- N3 Sewell NQ
- H1 Stephenson NQ
- Teddington Hybrid N

6.10.2. Pistachio Rootstocks

- Pistacia atlantica CS
- P. chinensis C
- P. khinjuk C
- P. mutica C
- P. terebinthus CNS
- P. vera V

6.11 Chestnut

- Castanea seedlings
- Castanea sativa CNWV

From: THE IMPROVED NUT TREES OF NORTH AMERICA, and how to grow them,
 by Clarence A. Reed and John Davidson (see note on Bookshop Service)

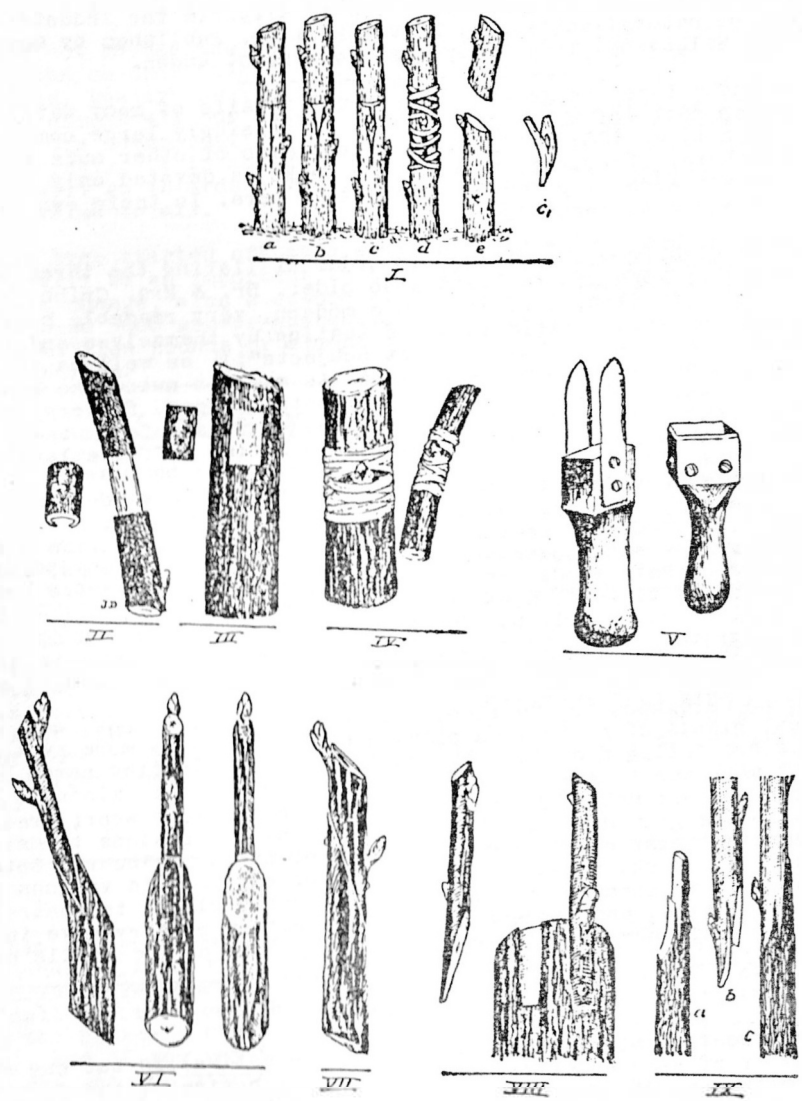


Fig. 13. Some asexual propagation methods: *I*, progressive steps of the T-budding operation (sometimes called shield budding); *II*, ring bud ready; *III*, patch bud ready; *IV*, both in place; *V*, budding tools; *VI*, modified cleft graft; *VII*, splice graft; *VIII*, inlay or bark graft; *IX*, whip graft (*a*, stock; *b*, scion; *c*, union).

AUSTRALIAN NUT BOOKS

** WILD FOOD IN AUSTRALIA, by A.B. & J.W. Cribb. Published by Collins, Sydney, 1975. 240 pages, 8 colour plates. \$8.50.

** The USEFUL NATIVE PLANTS of AUSTRALIA, by J.H. Maiden. Originally published by Trubner & Co., London, 1889. Republished 1975 by Compendium, Melbourne. 696 pages. \$9.00.

** SELECT EXTRA-TROPICAL PLANTS, readily eligible for industrial culture or naturalization, by F. Von Mueller. Published by Government Printer, Melbourne, 1885. 466 pages. No reprint known.

Within these three books are to be found details of many native Australian nuts (of which there are a surprisingly large number -- maybe as many as 100), and in the third, also of other nuts which could be grown here. Of course, none of the books is devoted only to nuts, which is why each is given only two stars here. In their own field, each would be worth at least four.

As can be seen from the titles, in order of listing the three books are progressively more general, and also older. Dr. & Mrs. Cribb, both expert practicing botanists, have written a modern, very readable book which is the result of actual field-work and tasting by themselves and their two children (described as "useful test subjects"), as well as the analysis of older botanical lore of every sort. As well as nuts, the book covers edible fruits, seeds, leaves, shoots, roots, tubers, flowers, and fungi, and has a short section on animal sources -- freshwater mussels, wasp larvae, witchetty grubs, etc. A guide to living 'off the land'.

John Henry Maiden, the author of the second book, was born in England in 1859. Ordered on a sea voyage, on account of his health, he came to Australia in 1880, and became one of the foremost Australian botanists, for many years being Government Botanist of New South Wales, and Director of the Sydney Botanic Gardens. His excellent, comprehensive book covers such fields as timbers, dyes, gums, and plant drugs as well as the human foods section which will be of most interest to members. Compendium are to be congratulated on this re-publication, which, being a facsimile of the original, contains botanical names which have been changed since.

The Baron Ferdinand von Mueller, author of the third book, was one of the real giants of Australian plant history. Probably more Australian species are followed by the letters "F.v.M." (indicating named by him), than by any others. A short, stocky man, known for his kindness to children, and his habit of wearing at all times a long scarf trailing almost to the ground, he held the corresponding positions to Maiden, i.e. Government Botanist of Victoria and Director of the Melbourne Botanic Gardens. His book, produced in a number of editions in various places, was intended to open up the world of cultivated plants to Australians, who at that time, and perhaps still, were rather conservative in what they grew. Only now are people following up some of the trails he laid.

IN A NUTSHELL (No.9)

The Sweet or Spanish Chestnut (Castanea sativa) is but one of a number of species of true chestnuts, all native to the Northern Hemisphere. Other important species are the American chestnut, Castanea dentata, and the Chinese and Japanese chestnuts, C. mollissima and C. crenata. The American species was almost wiped out by Chestnut Blight, probably the most serious plant disease in history. There are four or five other species. A closely related family, also called Chestnuts, is the Castanopsis genus, with one species in the western U.S. and many others in South-East Asia. Other so-called Chestnuts, e.g. horse chestnut, water chestnut, pacific chestnut (Aesculus, Trapa, Inocarpus) etc. are completely unrelated, but do have similar starchy fruits.

WANSKO NEWS

Over 600 shares have already been sold in the WANS members' co-operative. Shares are still available, up to a limit of 100 per member, if you have not yet applied; for details see page 2 of this issue of QUANDONG. The share sales to date have enabled us to pay off the costs of forming the company and left a little over for working capital.

Members who are not themselves interested in commercial nut production can still help the co-operative by pointing out its existence to local producers of nuts. Western Australia is at present desperately short of nut supplies -- almost all our nuts are imported from interstate or overseas -- and the Co-operative would like to know of any current producers. Conversely, it is anticipated that a small proportion of WANSKO profits will go towards a Research Fund which will produce information of value to all.

Every giant oak tree started off as a small nut, an acorn, and perhaps one day WANSKO will be as important in this State as the California Almond Growers Exchange, also a co-operative, is in its State. The Exchange has around 5000 grower-shareholders and processes an average of more than a million pounds of almonds each day -- but it, too, had very small beginnings.

SOCIETY EVENTS

WANS President Peter Good represented the Society at the Bruce Rock Agricultural Show, held on September 18, 1976. Considerable interest was evident in the comparatively small exhibit we were able to stage. Members with a interest in display work are asked to contact Peter Good or David Noel before the Garden Week show next March, as we want to make that show a really first-class window for the Society's activities.

NEWS OF THE BIG NUTS

As forecast in QUANDONG earlier this year, peanut grower Jimmy Carter was elected to be President of the United States. With this settled, Australia has recalled walnut grower Nicholas Parkinson from his position of Australian Ambassador to the U.S., and made him Head of the Department of Foreign Affairs. In banana-bending country, peanut grower Joh Bjelke-Petersen remains as Premier of the State of Queensland. Nux Omnia Vincit.

BOOKSHOP SERVICE

The Society has an arrangement with the UNIVERSITY BOOKSHOP, Stirling Highway, Nedlands, W.A. 6009, (Telephone 865578), by which the Bookshop maintains stocks of recommended books on nutgrowing and allied topics. Members can call in, or order through the post - for postal ordering or by phone, the Bookshop first sends you an invoice (including postage cost), and if you pay this, they send the book. On most books WANS members can get 10% discount. Prices change rapidly. Current recommendations: (Note: (Q1-3) means reviewed in QUANDONG Volume 1, No.3). Ratings run from **** down to *.

- **** JAYNES, R.A. - Handbook of North American Nut Trees. \$13.30 (Q1-2)
- *** RIOTTE, L - Nuts for the Food Gardener. \$4.50 (Q2-1)
- *** SMITH, J.R. - Tree Crops. \$8.95 (Q1-1)
- ** REED, C.A. & DAVIDSON, J - Improved Nut Trees of North America. \$10.00
- ** MOYER, J - Nuts and Seeds. \$2.95 (Q1-2)
- ** SUNSET Western Gardening Book. \$8.80 (Q2-2)
- *** The JOJOBA HANDBOOK. \$5.00 (Q2-1)

TRAVELS WITH TIM - PART 3 (TIM LYNN-ROBINSON)

.... not in the insect field, but still a big headache, is the fungal disease Phytophthora cinnamomi, which causes trunk canker and root rot. Tetraphyllas, we were told, seemed to be less susceptible than the Integrifolias, so they use them as rootstocks. Higher incidence of Phytophthora (which in W.A. causes Jarrah die-back) occurs in wet soggy ground and where the bark of trees is injured by mowing machinery or by weedicides. Phytophthora can be controlled by good management, careful tree husbandry, and of course careful site choice. NOTE -- Pineapples are a natural host to Phytophthora.

Because of the surface-feeding nature of the Macadamia, sod culture (the practice of non-cultivation and the growing of grass) is carried out, and hence in Queensland mowing is an essential routine, and I venture to say a rather tiresome one, due to the rapidity of growth. This mowing procedure is very vital to young macadamias, as we saw on our visit to the next plantation.

Ned does his own propagation on tetraphylla roo stocks. Grafting can be done at any time, but I will mention more of this later. Ned was the only one, I found, who did seed grafting.

Down the road from the 'Alamo' grove is a property known as the 'Macadamia Plantation', owned by two Sydney businessmen. Some 600 acres of macadamias have been planted on old dairy pasture (kikuyu etc.), and trees range in age from one to five years old. Without fully knowing the circumstances here, we were a little sad to see many acres of young trees under stress from weed and grass competition, and could only say that it seemed an example of the dangers of trying to do too much too quickly, with an incomplete knowledge of what it entailed. Inflation was also playing its part here, as the cost of labour to effect good management would be enormous, and to catch up with all that should have been done would have needed a veritable army of good workers.

The 'Macadamia Plantation' had installed trickle irrigation to every tree, and had three huge 30-million gallon dams to supply the water, which tends to bring home the water needs of the Macadamia. There was a large, well-run nursery, propagating several varieties (again mainly Hawaiian), for their own use and for sale.

We were shown evidence on some older trees of the decimation of young shoots, caused by sudden infestation with the red-shouldered beetle, which apparently can happen overnight. The arrive in millions, and can soon dampen the enthusiasm of a 'budding' grower!

At this time, Ross Loebell gave us his opinion of training a young macadamia. The Macadamia's natural habit is one of vertical branching, which renders it vulnerable to winds and liable to limb breakage due to weak crotches. At the base of the leaf stem are 3 buds, one above the other. If the top two buds are removed, the bottom one will tend to come out at 90 degrees, and I stress tend, because on mentioning this to other growers later, they said that they had had mixed results because of varietal differences. Very long leaders, which some varieties have, can be 'headed off'.

It was suggested that as it was obvious that we would have to irrigate in Western Australia, we should have a talk with a Tim Trochoulis at the Alstonville Tropical Fruit Research Station, which we proceeded to do. Tim had done some work on trickle irrigation of macadamias some time back, and basically what he said was, that it was better to give two good waterings a week (he used a rate of 9 litres/hour) rather than water on a daily basis. The number of drippers should be increased with the age of the tree.

From here we headed for Brisbane, through sugar, pineapple, and banana plantations, with the climate becoming more unpleasant in its humidity. We had on our list CSR's Slocks Creek macadamia processing plant, but having been told about their reluctance to handle visitors, we went past it on the outskirts of Brisbane, and through to the north side of the city to visit the 'Daffodil' and 'Meadowlea' margarine people, whose subsidiary NUTTA PRODUCTS was being run in the same complex. I had to ring the day before for an appointment.

It seemed to me that our industry, in which I was intending being a producer, should have good liaison with the processor and the marketer. So, although I didn't talk with the chap I initially wanted to (I was to have that privilege later), I had a talk with a Mr Bill Ruddell who explained in general terms the processing procedure for macadamias. He made me realize that one thing I had not fully appreciated was the importance of the right drying techniques for nuts, as these go towards enhancing flavour and storage life. Perhaps this is the reason that a lot of imported nuts turn out to be unpalatable and rancid (walnuts in particular).

Bill answered my question about sundrying of nuts on racks as "all right, but somewhat haphazard", as temperatures from day to day vary so much. This leads me to mention that I imagined that in Western Australia, when the nuts fell all that was to be done was to pick them up, rack them for a day or two, then bag them for sale - easy! But, in fact if we are to compete with the cheaper imports, which on most occasions are well presented (in looks if not in taste), we must offer the consumer, and make him aware of, a superior product. This means hulling, drying correctly, grading, polishing, and attractive packaging, and this means good liaison with the processors.

I then asked Bill what varieties he would recommend a 'budding grower' to grow to satisfy him. He told me what I have already mentioned about the difference between tetrachylla and integrifolia types, but said that if I cared to come back the following week I could have a yarn with Ian McConachie (who is Nutta Products industrial chemist, but a ball of fire on macadamias). Bill rang Ian and I had a short talk over the phone. He was very interested in the fact that I was doing 'the tour' just to look and talk and find out about nuts. He said that he would be back at work the following week, and I must come back through Brisbane to see him. In the meantime, I must not miss a visit to the President and the Secretary of the Australian Macadamia Society, who both resided in the Glass House Mountains area.

One phone call later we were on our way to the fascinating volcanic area of the Glass House Mountains, where we eventually found our way to a delightful little property at the base of one of these ragged, steep-sided mountains.

The Secretary of the Australian Macadamia Society is a Mr Norm Richards, a retired structural engineer who took up this old pineapple property some 10 years ago. He used to run it part time from Brisbane, but now lives on the 10 acres of macadamias, pecans, custard apples, and oranges. This place was a credit to Mr Richards and his wife, and they very obviously enjoyed it. In fact we made a mental note, that whenever we struck older people with young nut trees, we noticed a vitality and a sparkle to them, and a great bond between them and their trees -- it was very good to see, because I believe that productivity is the essence to man's life (a little philosophical sidetrack here).

Mr and Mrs Richards did us proud with their marvellous hospitality, and we stayed with them overnight. His trees in appearance were the best I'd seen, and he did say that he used a considerable quantity of nitrogen

fertiliser. Whether this in fact leads to better fruiting, or just more leaf, is debatable. Norm adds copper oxychloride to latex paint and paints his macademia trunks, which helps in obtaining good coverage against Phytophthora. Norm also trims the lower limbs of his trees for easier picking, which he and his wife do themselves. Picking in fact is quite an item of cost in nuts. I discovered later that this trimming of lower limbs is not such a good idea, as the macademia top thickens up as a result, and trees blow over much more easily in a wind. Norm stuck mainly to two varieties, 'Own Choice', and the Hawaiian '246'.

The sod in between trees was just like a lawn here, and a credit to these people. Their pecans, however, although growing well were not fruiting so well, and this he put down both to lack of chilling time here and to lack of pollination. With some varieties of pecan, male flowers appear at a different time to female flowers, so that varieties have to be carefully chosen to cover these gaps, or poor fruiting will result.

Norm did say that macademia pests were a constant worry, and even though with the best will in the world you don't want to spray around with chemicals, you have to, or no crop results. Admittedly not much is really known about the 'vicious circle' side of spraying chemicals -- you kill one lot of bugs, which immediately imbalances another. It is possible, as the next grower we visited said, that it is best to spray as little as possible, which can be done by studying the optimum time to spray. I was horrified to hear on one Research Station that the 'boss' believed that "something had to be sprayed once a week" -- according to a routine rather than rational need!:

Norm Richards mentioned again his observation that if weedicides are to be used for under-tree growth, great care must be taken not to let spray drift onto the trunk, as even minute injury could increase incidence of Phytophthora.

Our next port of call was the Maroochy Research Station at Nambour, where our guide was Robert O'Mara, who has been working with macadamias for some years; however, as he said, evaluation of nut trees is a slow process. Robert could see no reason why, with good management, we should not grow macadamias in the West, with careful choice of area and variety. He said perhaps we should seek out our own seedling trees and use them for our propagation.

At Nambour they were looking at fruiting character (e.g. 'Own Choice' had the characteristic of fruit 'hanging on'), shell thickness, evaluation of Hawaiian varieties under Australian conditions, tree training, cross-breeding, etc. We saw trees here that were 25 years old and bearing 100 lbs of nuts per tree fairly consistently. With phytophthora, Robert mentioned that there was an indication that if a good acid humus was put around the tree, less infestation occurred, but this needed further investigation.

I asked Robert whether, at a future time, I might be able to obtain scion wood from the trees there for grafting purposes, and he had little doubt it could be arranged. I'm sure, also, that he would be only too pleased to help us with any information we required. This, in fact, was the story wherever we went -- help and information was not held back.

Robert O'Mara gave us our next lead, when I asked him what was happening in the Pecan field.

(to be continued

NUT QUOTE, No. 2:

"Give nuts to the slaves, boy; your time is past;
you have played with nuts long enough"
(Catullus -- Carmen Nuptialis)

NEW MEMBERS

Welcome to the following new members, who joined the Society between August and October, 1976. The Society now has members in 8 countries.

- 255 Mr R Stokes Post Office Dwellington 6213
- 256 Mr R H Buchrig Scarr Road North Dandalup 6207
- 257 Mr A J Hinds 40 Roberts St Bayswater 6053
- 258 Mr B R Connell 111 Marston St Kelmscott 6111
- 259 Mr T Thomas
- 260 Mr C J Ryan 7 Crar Rd Hamilton Brisbane Qld 4007
- 261 Mr K Gow 42 Gairloch St Ayrlecross 6153
- 262 Netania P.O. The Lakes WA 6500
- 263 Mr D F Biddles 23 Eric St Cottesloe 6011
- 264 Mrs B I Martin PO Box 976 Geraldton 6530
- 265 Mr J Van der Plaats PO Box 207 Carnarvon 6701
- 266 Premier Nurseries PO Box 400 Griffith NSW 2660
- 267 Mr C Trethowan RMB 307 Cranbrook 6521
- 268 Miss L J Mair 7a Gooseberry Hill Rd Kalamunda 6076
- 269 Mr A Teese 'Woo Woon' KSD Yarram Vic. 3971
- 270 Mr R M Raynes K.K. Terrace Taipe Rd, Shatin Hong Kong H.K.
- 271 Mr F W Betts 10 Morato Cres Cloverdale 6105
- 272 Mr G R Scarrott Curransong Rd Berourra NSW 2082
- 273 Mr W Stoeverlaar 21 Moorarra Ave Narrabeen NSW 2101
- 274 Mr A N Rogers PO Box 499 Busselton 6300
- 275 Mr R Thurlow 20 Queen St Margborough Qld 4550
- 276 Mrs R Paterson Napier Via Albany 6530
- 277 Mr K E Clarke 126 Connell Ave Goswells 6110
- 278 Mr D Burtenshaw 17 Hadway Cres Rolleston 6111
- 279 Mr B Bailey 'Nuburdon' Forest Hill via Mt Barker 6304
- 280 Mr G R Pearson 7 Baramba Rd City Beach 6015
- 281 Waldeck Nurseries Pty Ltd Russell Rd Penrith 6065
- 282 Mr E Rutley Halliburton Ltd Tronolow 15 Jakarta Indonesia Indo
- 283 Libran BACORE Science Ref Library 10 Forchester Gdns London W24DE U.K.
- 284 Mrs M R Morton 3 Claud St Katanning 6517
- 285 Mr E A Toock 11 Garden St Swanbourne 6010
- 286 Mr G N Pepper Four Foot Rd Gevevelen Tas. 7116
- 287 Mr I Hawthorne 155 2nd Ave Eden Hill 6054
- 288 Mr N B White 66 Hazlett Rd Kellyville NSW 2155
- 289 Mr J Gilmour 14 Edward St Bophary 6276
- 290 Mr R Magnus Peaches Creek Wollongbar NSW 2480
- 291 Mr S Winfield Spahourne Rd Parkerville 6553
- 292 Mr J Forth Hillsdale Harcourt Albany 6530
- 293 Mrs F Locke PO Box 41 Bruce Rock 6116
- 294 Mr R De Strodias Lot 1 Annan Grove Rd Fouse Hill NSW 2153
- 295 Mr R G Williams B' Emdre Ave City Beach 6015
- 296 Mr S Sinclair 'Zetland' Napier Albany 6530
- 297 Mr I Downie Lot 198 Easton Rd Mt U. Linn 6055
- 298 Mr H J Francis 'Morra-Leaf' Humber 6506
- 299 Mr F P Herrman Lot 2, Allende Rd H. Kingston 6070
- 300 Mr S G Garrod 31 Land Ave Millerton 6115
- 301 Mr R H Brown-Cooper 12 Subisco Rd Subisco 4003
- 302 Librarian Bova Horticulture 157 Liverpool St Sydney NSW 2000
- 303 Mr L Moore 13 Hill Rd Attstable 6111

1976 YEARBOOK

Setting up of the Society's WANS YEARBOOK 1976 has begun. It is hoped that the Yearbook, expected to be issued in February 1977, will be as well received as the 1975 issue. Articles have been received on the platachio, the pecan, and the walnut in Australia, and nut trees of the Northern Territory. Unusual nuts described include Hicksbeachia, Pinschia, and Terminalia. Overseas articles describe nuts in Oregon, South Africa, and the Seychelles.

WEST AUSTRALIAN NUTGROWING SOCIETY
(Regd. Category 'B')
P.O. Box 27, Subiaco
W.A. 6008 Australia

POSTAGE PAID
Perth Victoria Square
W.A. 6000 Australia

WEST AUSTRALIAN NUTGROWING SOCIETY: BOX 27: SUBIACO

