

GREVILLEA STUDY GROUP NEWSLETTER

No. 5

MARCH 1982

Ref No. ISSN 0726 -7517

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Welcome to the new year's study. While my newsletter output is restricted to two a year, I have received and replied to a great deal of correspondence in the interim. It would be a great saving if, when you write, you enclosed a stamp addressed envelope, by the way. Well, how has the group been going? Judge for yourself. During the year the cutting exchange began to operate quite successfully. The most popular list by far was the Rowley list but I am grateful to all contributors. Against my own advice, I asked for some material in November which duly arrived in very poor condition due to the heat in my letterbox where it sat all day limply awaiting my return from work. Two of our members have just returned from a W.A. trip during which they managed to overwhelm me with cutting material. Your thoughts were appreciated Keith Alcock and John Knight. As if that was not enough, Neil Marriott also wanted part of the act and despatched similar amounts of material to the point that my wife began to worry that I might divorce her and marry a plant. The upshot is that we will soon have lots of new material for the group but we will have to identify it first. My thanks to the above people for their keenness and general willingness to assist.

The despatch of this sort of material taught me lots of lessons. I had great difficulty in getting material suitable for cuttings from plants with hard or sharp pointed leaves. Often the leaves on this sort of material would simply drop off when the plastic bag was opened. The leaves of these species often punctured the bag and dried out. The travelling time in the mail ranged from 5 to 9 days, far too long. Indeed future travellers should arrange some sort of air despatch if possible. More expensive no doubt but more productive. Perhaps these species should also be wrapped in damp newspaper.

Other members who assisted in despatch of cutting material were Phil Wood, Wanneroo Wildflower Nursery, Bill Molyneux, Ross MacDonald David Shiells, Peter Althofer and Geoff Butler.

Bill Molyneux also wrote a lengthy piece on *Grevillea alpina* and Neil Marriott likewise on *G. aquifolia*. Other members are working in other areas. I would like to thank David Shiells and Glyn Sago here.

I have supplied the National Botanic Gardens with 27 species which they were not growing and the Burrendong arboretum with a similar number. Peter Althofer also gave me 100 plants of *G. robusta* for use in grafting. If any members are in need of some, please let me know.

This newsletter contains much relevant information on grafting. Some of my friends think I'm graft "mad". Perhaps they're right. Nonetheless, unless we explore fully this technique, many horticulturally desirable species will forever remain out of cultivation. In the East, for instance I think of *G. excelsior*, *petrophiloides*, *eristachya*, *hookerana* forms or even *dryandri*. In Sydney I find *G. aspera* impossibly difficult and the short lifespan of *G. alpina* a matter for tears. How many more? Perhaps a hundred. The point is that many exotic species are always grafted, I think here of roses, camellias or fruit trees. Nothing special about it--so why not try it?

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GRAFTING GREVILLEAS - COTYLEDON GRAFTS

Paul Brady

I have used *G. robusta* as the stock. It grows in most soils, is tough, disease resistant, is easily obtainable, and grows quickly. I use very small seedlings as the stock plant. It is interesting that poor cutting material can be used off a dying plant with a much greater success in grafting than with cuttings. This type of material will often "take" more readily.

One of the reasons for grafting is the provisions of susceptible plants with a disease resistant, vigorous, rootstock. Grafting virtually eliminates root rot as a problem if you use the correct rootstock.

Other reasons might include:

THE SAVING OF RARE MATERIAL AND SEEDLINGS. You might have a small amount of material of a rare plant which is dying in your garden. It could be better to use this material as a graft than a cutting.

SPEED OF GROWTH. Often the vigorous stock may enhance the characteristics of the cutting and on *G. robusta* the growth rate is certainly well above normal. Grafting also often makes flowering more rapid and robust.

STANDARDS. This is not everyone's idea of the way to grow plants but some appeal to the general public can be discerned in its preference for standards. Prostrate ground covers such as *G. obtusifolia* or *G. Poorinda* Royal Mantle or *G. gaudi chaudi* can be grafted on rootstocks as much as 10' high to obtain the effect of a weeping grevillea. Hmm!

PRESERVATION OF UNUSUAL FORMS. Often the best way to propagate certain plants is by grafting them e.g. variegated *tristanias*, unusual colour forms of certain species.

NOVELTY. Various possibilities come to mind here. How about a *G. banksii* with white, red, pink and gold yellow flowers.

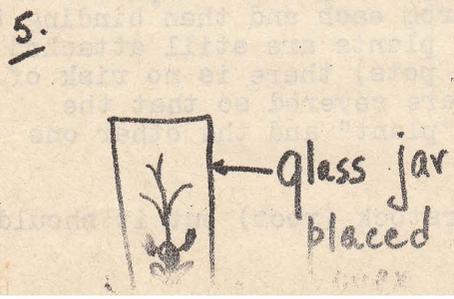
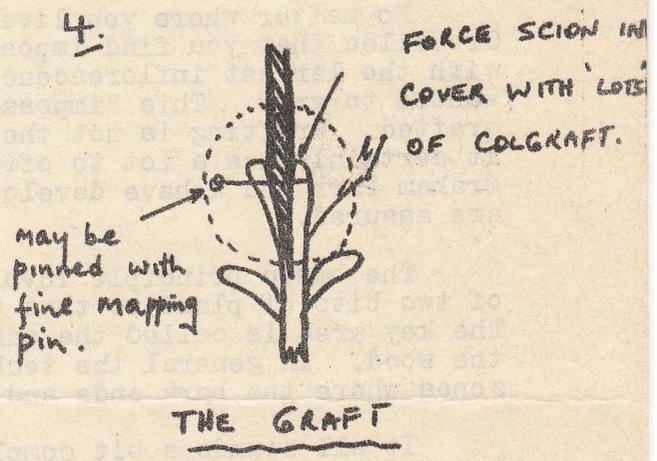
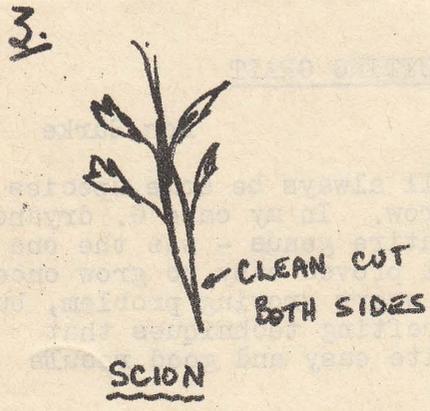
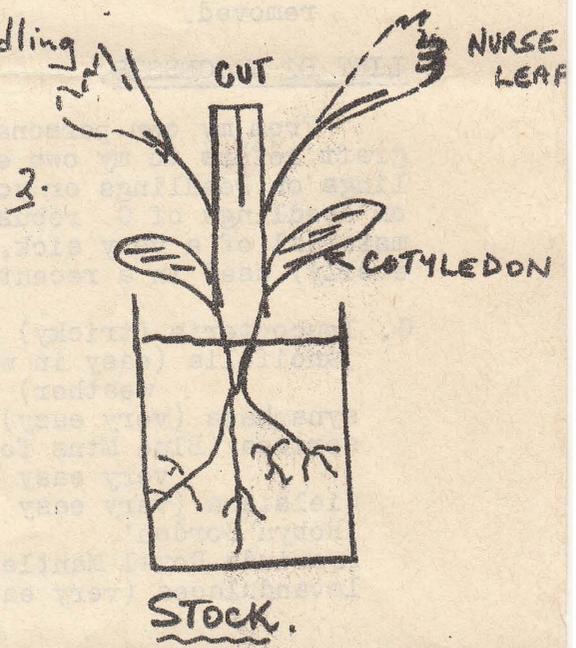
There are also some great possibilities in dwarfing. Using a *G. juniperina* rootstock I am trying an adult *G. robusta* as a graft in the hope of obtaining a small growing plant instead of a forest giant, whose flowers can't be seen until they fall.

I carry out cotyledon grafts or grafts on very young plants as I find these very quick to take and I don't have to worry about cambial layers not matching nor do I have to wait too long for the stock plant to grow.

The wedge cleft graft I use is illustrated. To ensure success:

- (a) avoid the hottest and coldest parts of the year if possible. Autumn and spring are the best times. Furry leaf plants are difficult in summer especially.
- (b) keep materials clean. Sterilise your sharp razor with a match or lighter.
- (c) with young material tying is not necessary. A good dab of colgraft does the sticking job. Woody material does need tying. You must however match the cleft with the wedge tightly (You can also pin the material - ed.)
- (d) match the cambial areas carefully on uneven sized or old material.

TECHNIQUE



- (e) Always leave at least two nurse leaves on your stock.
- (f) remove any stock buds as they appear
- (g) Place the completed graft under a glass jar. You can mist the material first. Leave it in a warm well lit place and don't fiddle with it.
- (h) once the scion starts growing, remove the bell jar gradually and harden it off slowly. Re-do the waxing when the jar is removed.

LIST OF SUCCESSES.

From my own personal experiments, the ease or otherwise of the graft refers to my own experience. These were all grafts of seedlings on seedlings or young growing shoots of adult or larger plants on seedlings of *G. robusta* - the only exception was old, partly woody material of a very sick, mature *G. dielsiana* (which took quite easily) used in a recent graft.

- | | |
|---|--|
| <i>G. leucopteris</i> (tricky) | <i>G. pteridifolia</i> (easy with care and young soft scion) |
| <i>juncifolia</i> (easy in warm weather) | <i>juniperina</i> (easy) |
| <i>synaphaea</i> (very easy) | <i>candelabroides</i> (very easy) |
| <i>sericea</i> (Blue Mtns form) very easy | Cochin Hills (O.K. in warm not hot weather) |
| <i>dielsiana</i> (very easy) | <i>refracta</i> (easy) |
| 'Robyn Gordon' | <i>johnsonii</i> (easy) |
| <i>Poorinda Royal Mantle</i> | <i>quercifolia</i> (easy) |
| <i>lavandulacea</i> (very easy) | <i>crithmifolia</i> |

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GRAFTING GREVILLEAS - THE CUTTING GRAFT

Don Burke

No matter where you live, there will always be some species of *Grevillea* that you find impossible to grow. In my case *G. dryandrii* with the largest inflorescence in the entire genus - was the one I wanted to grow. This "impossible" plant proved easy to grow once grafted. Grafting is not the answer to every growing problem, but it certainly has a lot to offer. The grafting techniques that Graham Parr and I have developed are quite easy and good results are assured.

The basic principle involved in grafting is the joining together of two bits of plant so that their internal structures are aligned. The key area is called the cambium which lies between the bark and the wood. In general the technique involves aligning (exactly) the zones where the bark ends and the wood starts (see Diagram A)

It all sounds a bit complex but if you use the "approach graft" it is quite easy. This system involves placing the two plants side by side, slicing off a sliver of bark from each and then binding them together with budding tape. Since both plants are still attached to their own roots (perhaps one or both in pots) there is no risk of death. After about 8 weeks the plants are severed so that the desired plant forms the top of the new "plant" and the other one the bottom (See Diagram B)

Any species is suitable as an understock (root) but it should have the following characteristics:

Long life span
Hardy in your area
Mechanically strong root system
Easy and cheap to propagate or purchase.

In general, seedlings are better than cuttings since they develop a stronger tap root system. I mostly use *G. robusta*, but the lobed form of *G. barklyana* (Labertouche form) is suitable as well as *G. banksii*, 'Poorinda Peter', x *hookerana* or whatever you may have lying about.

It is a mistake to remove all the foliage from the understock too soon. Leave most of it on until the time that the plants are severed, at which stage the top is removed. Leaves lower down the stem should be left on until the new "top" is vigorously growing. However, don't let the understock smother the new graft with shoots - nip them back so that the graft dominates. The reason that the leaves are left on is that they produce food for the plant; if they are removed the plant may starve to death.

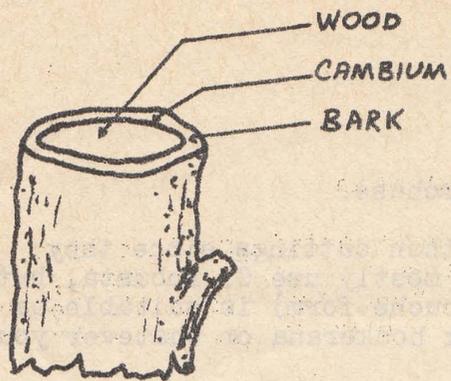
Some of the species so far grafted by this method:

<i>acanthifolia</i>	<i>juniperina</i> (most forms)
<i>banksii</i> prostrate white form	<i>laurifolia</i>
<i>banksii</i> prostrate red form	<i>lsvandulacea</i>
<i>bipinnatifida</i>	<i>leucopteris</i>
<i>biternata</i>	'Lilian'
<i>caleyi</i>	<i>obtusifolia</i> prostrate
<i>dielsiana</i>	<i>pteridifolia</i> prost. and upright
<i>dryandrii</i>	'Poorinda Illumina'
<i>eristachya</i>	'Poorinda Royal Mantle'
<i>glossadenia</i>	<i>quercifolia</i>
X <i>gaudichaudii</i>	<i>repens</i>
<i>hookerana</i> (true species)	'Robyn Gordon'
<i>johnsonii</i>	'Sid Cadwell'
<i>juncifolia</i>	<i>venusta</i>

Commercially, the method that has the most promise is called the Cutting-Graft. This involves joining two pieces of plant material and striking them as a joint cutting. There are two methods: the side graft and the top cleft (see Diagram C). The side graft is in my opinion by far the best. With this method you take a cutting of, say, *G. robusta* and make a 1-2 cm cut downwards into the stem. This cut should not be deeper than half-way through the stem. A piece of the other plant of the same diameter as the *G. robusta* is trimmed to a wedge shape and inserted into the cut; the union is then secured with packing tape. (I use strips of tape cut to about 3-5 mm. wide x 20 mm. long) Since the stems of both pieces of wood used in the graft are of the same diameter, aligning the cambium is not necessary. Just fit the pieces together cleanly. This is quick and easy, requiring no skill.

The Y-shaped result is then placed in a sand-peat cutting mix with the fork of the Y (the graft) submerged in the mix. This should be done under the mist in a glasshouse. When the plant has rooted it is potted on at which time the undesired top is cut off and the graft union is now exposed to the air (i.e. the plant is potted about 1 cm. higher than before). If roots have emerged from the top plant, these can be rubbed off at this stage also. From this point on the composite plant is treated like any ordinary cutting-grown plant.

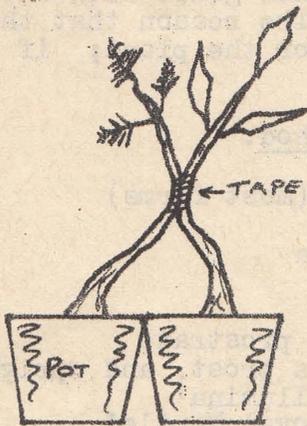
Estimates are that it costs about twice as much to strike a cutting graft as an ordinary cutting. Commercial propagators sell rooted cuttings in tubes for about 35¢ so a graft would cost about 70¢. After this stage, the costs are identical with ordinary cuttings. So, a plant grown by cutting-graft into, say, a 6" pot should cost about 50¢ more than a cutting grown plant. The only commercial nursery using this new method is Camellia Grove Nursery, who report that they get a similar strike rate for cutting-grafts as for cuttings (90% or more).



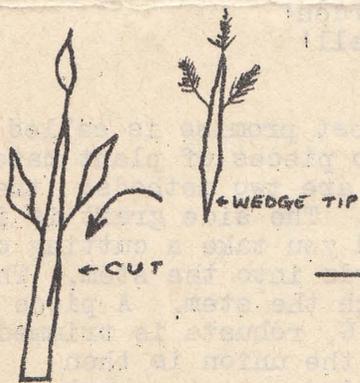
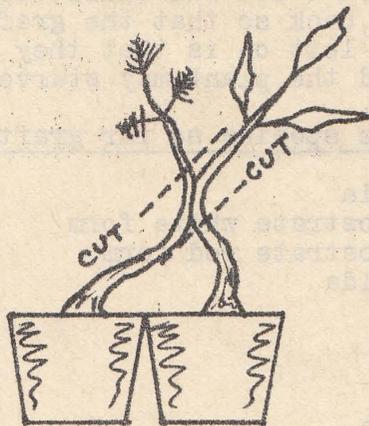
TREE STUMP



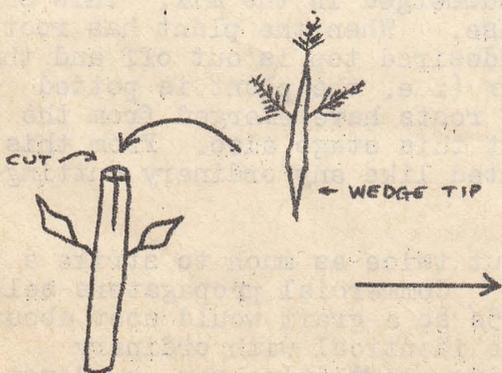
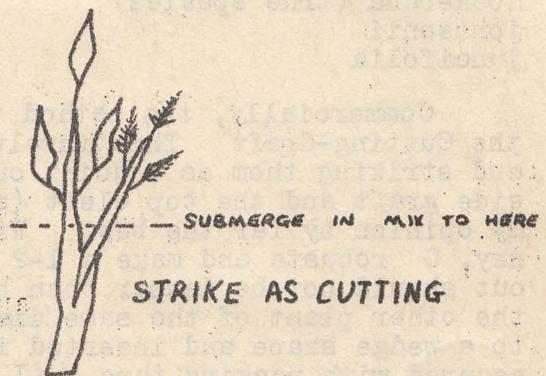
TWIG, CUT TO CHISEL POINT



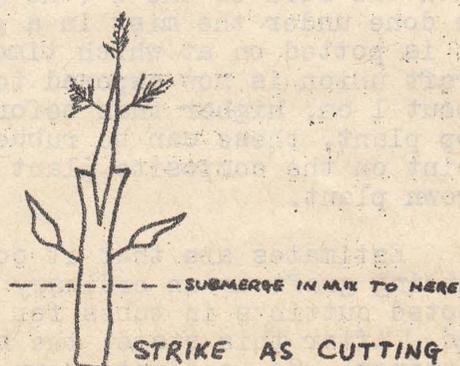
APPROACH GRAFT



SIDE CUTTING-GRAFT



TOP CLEFT CUTTING-GRAFT



GRAFTING - A WORD OF WARNING

Pip Gibian

As a P.S. to previous comments on grafting, we have struck one unforeseen problem. As *G. robusta* grows so rapidly, the stock plants need to be young and in large containers or they may become pot bound before planting out. We lost two newly planted grafts during a spell of unseasonable hot spring weather, before the rain.

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CULTIVATION TECHNIQUES

Neil Marriott

I have great success with the following method of cultivation:

- (a) area for the garden is deep ripped with a tractor ripper to about 2' 6".
- (b) area is then well cultivated with a rotary hoe.
- (c) area is then left to fallow for about six months.
- (d) area is then cultivated again, formed up into a long mound with drainage ditches along each side:



- (e) plants can now be put in either on top of mound or on sides depending on drainage requirements. If garden is intended for inland species, large amounts of gypsum and gravel are cultivated in.
- (f) bed is heavily mulched with 4-6" of coarse washed river sand.
- (g) after initial watering most plants are never watered again. Exceptions are those species from moist locations e.g. *G. acanthifolia*, *laurifolia*.
- (h) Soil type is heavy loamy soil incorporating a large amount of buckshot gravel.

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PROPAGATION

Germination Trials on Seed Held in Seed Bank

Betty Rymer

Although seed samples used were only small the following reports could be of use to members using the seed bank. All seed that did any good germinated within six weeks, mostly 3-4 weeks. All seed was cut but not peeled at first. Slow germinating seed was peeled and returned to the pot. This was successful with *G. leucopteris*. Bottom heat was good for germination especially during colder months. Those without bottom heat were much slower in germinating.

	<u>No. of seeds</u>	<u>No. germinated</u>	<u>% germ.</u>	<u>days</u>
<i>G. manglesoides</i>	6	4	66	12
<i>trifida</i>	4	1	25	no record
<i>berryana</i>	4	2	50	12-20
<i>bipinnatifida</i>	4	1	25	20
<i>eristachya</i>	16	8	50	21-36
<i>integrifolia</i>	38	9	23	22-30
<i>annulifera</i>	5	3	60	23
<i>pteridifolia</i>	5	3	60	19-22
<i>stenobotrya</i>	8	3	38	12
<i>leucopteris</i>	5	5	100	32-35

	<u>No. of seeds</u>	<u>No. germinated</u>	<u>% germ.</u>	<u>days</u>
G. polybotrya	5	1	20	40
wickhamii	23	13	56	19-35
petrophiloides	11	3 (Garden)	28	22
dryandri	20	16	80	12-19
longistyla	22	8	36	32

Not all species survived potting on after germination. Early indications are that it seems better to pot on at an early stage.

The following seed gave no germination at all: G. decora, scortechinii, pterosperma, pilosa, wilsonii, nematophylla, apiciloba, eryngoides, candelabroides, Sandra Gord, Burra Range, Coochin Hills.

Most of this seed seems to dry and disintegrate inside the seed coat while some just goes soft and brown.

- G. eriostachya germinated best in bags of peat
- annulifera needs to have the round top completely peeled. The cotyledon is firmly attached to flat bottom.
- dryandri bottom heat - germination time 12 days
no bottom heat - germination time 19 days

It was noted that if root tip was damaged during potting, the plant often died. Those plants presenting a very good root system survive better, i.e. with a root twice as long or longer than the top growth.

All seed was germinated on a capillary bed of sand or gravel using vermiculite as the medium. Seed planted in winter was watered by percolating warm water into the system. In some cases where bottom heat was required, a commercial "potagator" was used.

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SEED GERMINATION

Trials on G. stenobotrya and G. refracta

Rod Kent
Coober Pedy SA

Some Conclusions:

1. The fresher the seed the better the results.
2. Plant a lot of seed, maybe up to a hundred or so.
3. Alternate soaking and drying of nicked seed seems to work well with G. stenobotrya.
4. The fatter the seed the better.
5. The temperature should be continuously high.
6. Sunlight must be present for germination to occur.
7. Dead seed will go mouldy.
8. Do not expose young seedlings to very high temperatures or intense sun.

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SEED BANK

Curator: Mr. B. Timmis
102 Lugarno Rd.
LUGARNO 2210

One of our members writes that the packing and despatch costs are too high and prefers to supply own envelope and stamp. This is O.K. by me. A word of warning though - I have had two batches of seed sent this way crushed beyond recognition. Therefore, caveat emptor - the buyer accepts the risk. When placing an order it helps if you can list alternatives.

CURRENT SEED LIST

Seed costs 50¢ packet plus \$1 postage/packing or supply your own stamped envelope.

- G. aquifolium
- bipinnatifida
- bitermata
- candelabroides
- crithmifolia
- decoræ
- endlicherana
- eristachya
- excelsior
- floribunda
- glauca
- integrifolia
- juncifolia
- leucopteris

- G. macrostylis
- obliquistigma
- pilulifera
- pinaster
- polybotrya
- pteridifolia
- pterosperma
- pulchella
- refracta
- robusta
- thelmanniana
- tritermata
- wickhamii

Free seed to Active Members (50¢ packet to passive members) plus \$1 postage/packing or supply your own stamped envelope.

- G. alpina
- banksii
- bipinnatifida
- buxifolia
- Burra Range Hybrid
- sp Coochin Hills
- dryandri
- longifolia
- longistyla

- G. muelleri
- paniculata
- patentiloba
- pteridifolia
- sessilis
- barklyana
- intricata
- venusta
- leucopteris

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CUTTING EXCHANGE

If you have ordered cutting material, your orders will be sent on to the suppliers with this newsletter. Therefore you can expect material shortly:

SHIELLS list: delete G. repens, G. alpina WHROO

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FINANCIAL REPORT

Your fees for 1982 are now due. Please send your \$2 by return to me with the enclosed form.

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Till next time,

PETER OLDE