EREMOPHILA STUDY GROUP NEWSLETTER NO. 26 MAY 1983

This year has started off with good rains in many areas and here in Adelaide after some very dry summer months most plants are responding very well to this watering while the soil temperatures are still up. Some plants such as Eremophila punicea, E. clarkei, and E. lachnocalyx, were looking quite sick but are now showing new growth. The E. punicea worries me. In the past I have been able to strike plenty of cuttings but with an almost equal fatality rate from stem-rot later. An occasional plant survives, but for the last couple of years none have survived for long. I would hate to lose it.

E. clarkei is another puzzle. It strikes well from February to April, pots up quite well, then dies during the winter. Three have been placed in pots and will be put in the warmest spots available. Some of my plants are getting old and need to be replaced to assure their survival. A few were once-only strikes and have provided a few cuttings for others to cultivate. This points to the difference we have with cuttings. The first or initial batch of cuttings comes from the natural habitat which is often very different from what it will be in cultivation. The second generation comes from those plants which struck in the first instance. As these are usually grown in better conditions than the natural habitat, they take on somewhat different growth characteristics, hence the ability to strike the originals, but not the plants grown from them. Of course, it is often easier to strike the second generation than the first due to the fresher material, greater opportunity, and better timing to suit climatic conditions.

Grafting has supplemented the cutting method and has meant more plants of certain species, which have proved difficult in the past.

G.N.

NEVER SAY DIE — WITH SOME EREMOPHILAS

Barbara Bayley

This is a follow-up report on frost damage (see Newsletter no. 24). It was just as well all plants were left alone to see if they would shoot.

E. purpurascens, which we thought we would lose, has bounced back with plenty of fresh shoots from the older wood on the lower part of the bush. This plant had all the damaged growth removed to a height of about 20 cm. Now we have a much bushier shrub, around 40 cm high.

E. laanii. Both white and pink forms have an abundance of new growth. The growth is so prolific that there is hardly any wood showing on both of these young plants. These also were pruned and shaped to about 30 cm. They are now around 45–50 cm.

E. mackinlayi, the hardest hit of them all, has been a real surprise, as it shot out fresh growth from just above ground level. When it was looking quite dried up and dead, the hose was left dripping on it for some hours, giving it a real soaking so perhaps this helped. The new growth I might add looked nothing like the old, as the leaves were much longer, larger, and more pointed. Now this plant would be 50 cm high and a much better shape than it was originally.

E. alternifolia, is still sending out fresh growth and is covering up well after dropping a number of leaves.

E. tetraptera, E. drummondii, E. chamaephila, E. strongylophylla, and E. 627 (all young plants) were too small to survive the severity of these frosts.

E. maculata var. brevifolia, although reduced in size at the time, is now a beautiful shaped little bush 40 cm high by 50 cm wide.

E. brevifolia did end up by losing a few side shoots, but now has doubled its size and has bushed out more than it was before.

AFTER THE FLOOD - NOAH'S NURSERY

Ken Wcznes

Throughout the week the weather had been warm and humid. There was a distinct feeling that something had to happen. Sure enough, just after lunch on the 2nd March, with a crash and a flash, the heavens opened. Two hours later we had recorded 55 mm of rain. Neighbours 3 km away received 115 mm, so probably plantings in our scrub and cottage areas received 75–90 mm. Water flowed everywhere and we did not know whether to cheer or cry. We had a further 13 mm next day, as well as some follow-up showers which kept the surface damp for a week.

The effect of such a typical inland storm on the eremophilas was incredible. Within eight days E. strongylophylla, which usually looks half dead in summer, had shoots 3 cm long with four leaves and two buds, while E. pterocarpa and two different coloured specimens of E. latrobei took only a fortnight to be a mass of flowers. E. pterocarpa is an autumn flowering species and I have previously described its rapid response to rain, but this was easily its most spectacular effort. A 1.5 m billowing cloud of pink corollas and soft silver-grey foliage, it has continued for two months now as subsequent heavy rains have continued the display.

The southern green leaf form of E. latrobei is the only form to persist here; our cold damp winter (sometimes) seems to prove too much for the Central Australian and grey-leaved forms. My plants vary only in flower colour, the cutting grown cerise flower from Andamooka being the best. A bush seedling from Kingoonya has always disappointed with only a few watermelon-pink flowers. This year, within a forthnight of the first rain, they rivalled each other in glowing displays which lasted 2–3 weeks. Now they are having another competition, a month after the first.

Species to flower well included E. gilesii, E. bowmanii var. bowmanii, E. granitica (pink and blue forms), E. mackinlayi (normally only spring), E. strongylophylla, E. polyclada (normally finished by now), E. aff. mackinlayi, E. aff compacta (the slender shrub we used to incorrectly call E. maitlandii), E. obovata var. glabriuscula, and E. freelingii. Others to have flowered reasonably well without being showy and mainly out of season include E. clarkei, E. decipiens (forms), E. alternifolia, E. delisseri, E.purpurascens, and E. laanii (white and dark pink forms). E. christophorii flowers continuously.

I usually consider the May–June flowering of E. oppositifolia (forms) to herald the new season, but they have sprung into action well ahead of schedule and are either in full flower or heavy bud. The green-flowered group, comprising E. virens, E. gibbosa, and E. serrulata (in its various forms including E. 445 which I consider quite distinct), are flowering strongly; also E. serpens which may or may not be included with these.

So, a big string of pluses for the big rain. The only loss was E. goodwinii at 18 months old, 1 m wide, and which had flowered continuously from planting out. A mass of fruit left behind may eventually lead to natural replacement. I had left the drip-system on this plant for the second summer so perhaps this caused its demise rather than the storm.

I just mentioned natural replacement, but before going on to that I should record that we have received several heavy falls since. The storm rain totalled 75 mm for the first

week of March with a couple of handy showers later in the month, followed by a total of 122 m between April 3 and May 3.

GERMINATION OF EREMOPHILA SEED

Ken Warnes

As described on other occasions I just leave my pots of seed to their own devices now. My experience has shown that germination of most species occurs with heavy natural rain in autumn and that artificial watering has virtually no effect. At other times I have described how E. gilesii came up after six years and continued to do so for the next three seasons. However the result of my big planting on 29 April 1979 was very different. After the storm I was thrilled to count 11 plants of E. fraseri, numerous E. obovata var. glabriuscula, several E. macdonnellii, one E. gilesii (RI 15), and what I thought were several pink E. bignoniiflora and one E. georgei. From previous experience, which showed that both seedlings and my composure suffer adversely from trying to prick out early, I have left them. Now they are sturdy 6-leaved plants about 5 cm high and I must face the task sometime soon. It is now obvious why my early pricking-out failed. The radicle reaches the bottom of the pot two days after cotyledon emergence and side roots take time to develop. It is typical inland survival technique I suppose, getting the anchor down quickly, but it makes handling difficult.

With subsequent rains a few more seedlings have appeared, but not even one from the original pots. Late arrivals include one each of the following: E. latrobei, E. foliosissima (I hope), E. oldfieldii var. angustifolia, E. gilesii, E. goodwinii and a couple of others. So much for the nursery, now for the others!

The storm rain caused minor local flooding to the extent that fruits were washed into piles of debris in similar fashion to that sometimes seen in the bush. And the result was the same: germination, volunteers no less. Here the narrative will end as it is probably easier to list the results.

C = cottage, sandy loam, pH7.2

H = house, limestone rise, pH9

S = scrub, clay-loam, pH7

E. maculata. Several different forms from southern Australia:

1. From Mutooroo Station (South Broken Hill) (H). This form has copper buds and lemon flowers and the parent plant is in very poor condition. An estimated 50--60 germinated, many in multiples, from the drip-line of the bush to 2 m away. Many were from bare ground, so the drupe was either buried or had disintegrated; others were from trash heaps. A total of 22 were potted up using 450 gm tins with both ends removed, driven down around seedlings. They are slow growing, and in poor soil.

2. From Morgan, orange flower (H). The parent is dead, with the crown destroyed by white ants. An estimated 30-40 germinated, mainly around the former drip-line of plant. They are very vigorous and I potted 24, losing only 2. Some were probably destroyed in finding them in weeds 20 cm high.

3. A seedling, red flower (C). A large vigorous shrub 3 m wide. Many seedlings germinated between this and the Morgan form plants. Soursobs were very vigorous and the seedlings hard to find. I potted on about 35 but the resultant growth was weak and sappy.

4. E. macdonnellii (Willow Creek form) (S). The parent is 12 years old, and nearly dead. Of at least 10 scattered seedlings, 6 were potted, all survived, and the others disappeared. Another plant of this form thrived and died at the house some years ago, but I have not found any seedlings at that site.

5. E. laanii (pale pink form) (C). This is the form which I consider to be a colour variant of the white form; the dark pink form appears to me to be different in several aspects. The parent, slow but healthy, has thrown one sucker. Of an estimated 20 seedlings, I potted 13, and 12 have survived. These were very strong succulent seedlings from right against the trunk of the parent to 1 m from the drip-line. It is growing adjacent to a large deep pink form that sets masses of drupes, but under which I found only one seedling which is safely potted, and it looks different from the seedlings of the pale pink form. No seedling was found under the colony of six suckering shrubs of the white form at the house.

6. E. pantonii (H). This is growing next to a pale pink E. laanii at the house, and also to an E. christophorii. The first two potted are definitely E. pantonii (storm seedlings), but since then a number (10-15) of seedlings have appeared among the solid mass of fruit under E. pantonii. These look similar to the E. laanii from the cottage area but could also be E. christophorii as they are succulent and E. christophorii fruit would have washed in that direction. Only time will tell. None have been potted yet.

7. E. youngii (H). There are numerous seedlings under only one, the oldest of three, E. youngii in this section. There is an E. santalina adjacent and some seedlings look a bit different, so only time will tell if there are some of this species as well.

8. E. aff. mackinlayi (C). This is what I call it, the aff. being my own. It is the sprawling open form which many of you grow, and three seedlings were found; two were potted and are very strong seedlings and growing well.

9. E. mackinlayi (C). This is the true E. mackinlayi and probably gave the best result of all. This form has proved very difficult to strike and I know only of my plant. There are now 30 seedlings potted up and going well. These very strong seedlings hardly wilted when lifted. They came with the storm.

A number of other species produced few, or even less, seedlings, and of these most disappeared later.

Now I will continue with a few opinions, surmises, and also some problems.

A general comment is that seeds germinated only under bushes at least ten years old. Most seedlings were around the drip-line of the bush or further out. Only a few germinated under the canopy and in most of these the parents are tall slender species, such as: E. aff compacta, E. youngii, E. pantonii, E. oppositifolia, and E. alternifolia.

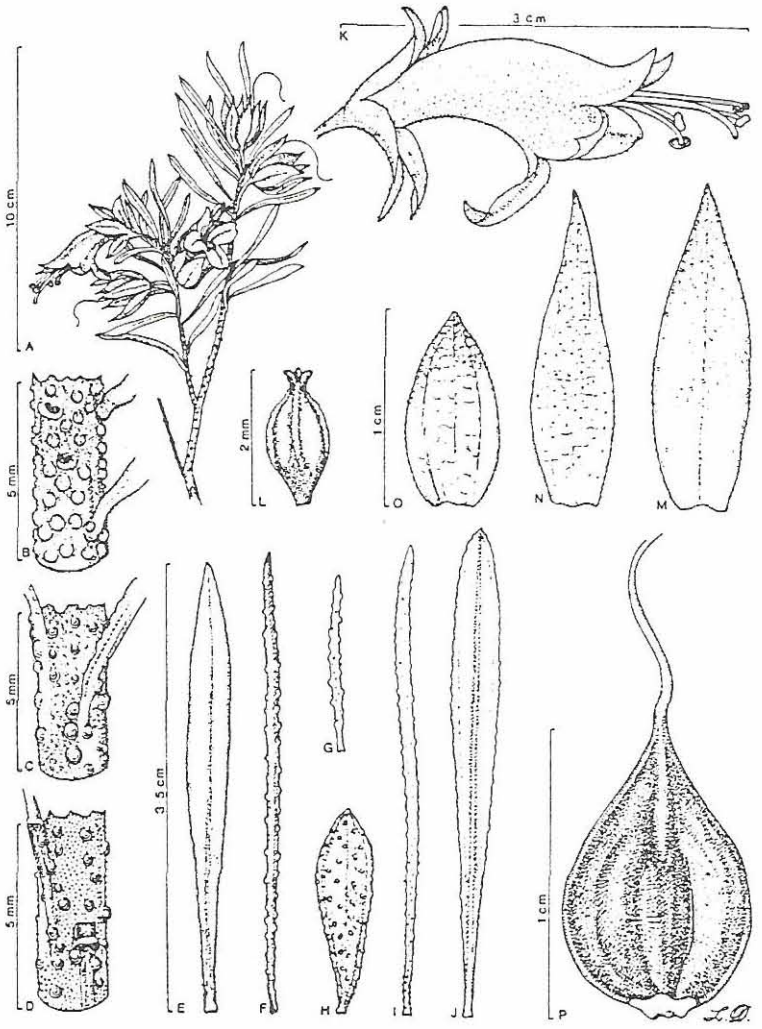
Seedlings do not like weed competition, probably mainly because of shading and rotting in damp weather. They wilted badly, especially when very young, following several dry days, and I suspect that moisture stress caused most of the disappearances. Those germinating at present are subject to attack by grey aphids and red-legged earth mites.

The potting up was done with minimal losses so I suspect that the initial penetration of the radicle is brief. It certainly was not obvious when potting up at about 6 weeks. The potted plants were placed in an underground cellar for however long was necessary; one day for most, 4—5 days for some of the undershrub ones. Obviously the storm rain germinated some species, others have required several soakings. Our local Department of Agriculture advisor believes that atmospheric nitrogen becomes soluble in thunderstorms and much nitrogen is actually washed into the soil. Could this extra nitrogen be

part of the answer? Rather than those solutions of sulphuric and hydrochloric acid some of you have been experimenting with, perhaps nitric or nitrous acid may be more suitable, or perhaps weak solutions of sulphate of ammonia or ammonium nitrate.

Why some then and some now? Is it the extra moisture with corresponding breakdown of fruit or inhibitor, or the lower soil and air temperatures, or less daylight? Whatever the reason it has not worked for all species. Among those fulfilling my criteria of old fruit in large numbers, which have not germinated at all, are: E. dichroantha, E. laanii (white), E. drummondii var. brevis (Barlow 1706), E. drummondii (prostrate), E. pterocarpa, E. subfloccosa (Eyre Peninsula), E. glabra (many forms), E. hillii (orange), E. ionantha, E. densifolia, E. granitica (pink and blue), E. scoparia (one only), E. santalina (doubtful), E. pachyphylla, E. dempsteri, E. oppositifolia var. rubra, E. sturtii, E. calorhabdos, E. eriocalyx, E. polyclada, and E. bignoniiflora, to name just a few. Others, which were younger plants, but with many fruit, also yielded nothing. These included: E. goodwinii, E. gilesii, E. "nivea", E. viscida, E. neglecta, E. exotrachys, etc. Of course, there could have been many seedlings that I did not find.

One final comment. The ones to germinate are the species with medium to large fruit. Perhaps some of the small ones did germinate but did not have the strength to continue.



Eremophila latrobei

A-B, E-H, K, M, O-P, ssp. latrobei; C-D, I, L, N, ssp. glabra.
A, habit; B-D, enlargement of branch to show variation in indumentum; E-J, leaf variants; K, side view of flower; L, young bud; O, inner surface of sepal; N, M, outer surface of sepal; P, mature fruit.