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For easy photocopying.)

Financial matters : Subs run from June to June, & remain at $ 5 within Australia, & $ 10 overseas. A tick in the relevant spot below shows where you are financial up to, according to my records.

2004-05	2005-06	2006-07	2007-08	2008-09	2009-2010

Why my weather obsession this newsletter : Because weather seems to explain the unprecedented flowering behaviour (or lack thereof) of many plants this year. Details later. The effects seem to be mainly due to the rapid alternation between warm & cool weather, rather than the drought conditions, as large trees were as often affected as small plants of the same genotype. The overall lack of normal hot summer conditions must also have been important. Any effect of the cool autumn conditions will show up next spring & summer, no doubt, but will be hard (impossible ?) to disentangle from effects of the preceding cool spring & summer, & whatever occurs this coming winter. Most unusually for S-E Qld, many *Boronia* plants were flowering through January & February this year, presumably due to the absence of scorchingly hot days.

Weather conditions & flowering behaviour : 2007-08 should have been a uniformly hot year, if one believes the more simplistic forecasts of the global-warming commentariat. In real life the globe cooled by half a degree or so, & nothing seems to have heated much since 2000. Here in S-E Qld we had a cool winter, turning to record cold levels in mid-July. On July the 19th there were temperatures below zero from the mid-north coast of NSW to at least Cairns. I have no friends right on the coast further north, & heard no ABC radio reports for that area. Most of these areas had never recorded frosts before, & cold air from out at sea froze the coastal strip on this day & the next. The width of the frigid strip varied with topography & the (warmer) urban footprint. Some of my friends on the Sunshine Coast less than 10 km from the sea had no frost, while nearby sea coast areas like Beachmere & Bribie Island were down to –5 degrees C. Most of Qld was 11 degrees C. colder than the July average, but particularly the coast. Usually inland areas are coldest. Brisbane & major cities stayed mainly above zero, due to the 'urban-heat' phenomenon. A few temperatures include –6.5 here at Greenbank, -11 at Harrisville, -5 at Gympie, -1 or colder all along the Gold & Sunshine Coasts, -4 at Mackay & at Rainbow Beach, & -2 to –12 on the Atherton Tableland. Many tropical fruit tree & tropical hardwood (for cabinet timbers) plantations were wiped out, including many stands of trees like blue Quandong (*Elaeocarpus grandis*) & *Athertonia* & Davidson's Plum. Occasional hillocks were warmer, & left pockets of live trees. I don't know what happened to the coffee & tea plantations ; maybe they were on sloping sites, as in Asia, & the cold air slid by. Or maybe not. Sugarcane crops on low-lying areas between the Qld border & Mackay were killed, including almost all those on the Gold Coast (closest to me). The burst canes lose their sugar, & hence are useless to crush, as well as being too abrasive for the mill machinery, but the farmers told me the mills penalised them for not supplying their agreed minimum cane quotas, despite the mills being shut because the cane was useless.

A friend with an orchid nursery 70 m from the sea at Beachmere lost most of his orchids on the 19th. Many of his neighbours grow succulents, African violets, geraniums & so on for southern markets, & most turned their water sprays on for the second cold night on the 20th. The result was plants encased in solid cones of ice, & total losses. Nearby areas of *Melaleuca quinquenervia* suckers about 4 feet high from recent clearing were killed stone dead ; adult paperbarks were defoliated on the coast & nearby islands.

Curiously, I have seen no reports in horticultural or forestry magazines, & I regularly see several, or on TV, of the devastation caused by the July cold. Everyone seems to have thought their local damage was just a local quirk. Only ABC radio carried a few reports. Mainly I gleaned news from my friends with nurseries here & there. The Tablelands branch of SGAP has been asked by the SGAP-Qld Council to report on the winter casualties in general, but has yet to give details.

To return to global warming. I don't doubt it exists, or did until recently, but believe it could quite easily reverse tomorrow, as the evidence for human causation is very shaky. CO2, in the past, has risen after temperature rises, & hence is unlikely to be the prime cause, although the physics of gases

makes it undeniably a cause. Natural variability in past eras has dwarfed any recent changes, & the causes are still largely unknown ------ solar radiation variation, volcanoes, etc., etc. In the relatively recent past, the years-long '1902' drought lasted as long as the current one, & was probably more severe, but affected fewer people due to the lower human population, minimal irrigation & vastly smaller cities. And then for nearly a century the Australian climate veered wetter again, while CO2 rose (especially with industrialisation spurting after 1940). Thirty & 40 years ago most climatic doom-mongers writing in journals like 'New Scientist' were worried by the fact that the present warm period of some 8000 years was already longer than the average inter-glacial period, & that therefore we were probably overdue for another ice age. This is almost certainly still broadly true, just the timing is unknown (like the looming 'Big Quakes' in California & Istanbul), & would be far worse than mild global warming. Think of almost all Europe, N America & China under deep glaciers. So, at the least, any measures against global warming need to be designed to be reversible, at least in principle. Heat shields in space could be risky. Apart from them, there are at least 4 other technological 'fixes' for global warming that will all work but be horrendously expensive, but far cheaper than losing all low-lying cities & beach areas.

The general press reports give a firm impression of a scientific consensus on anthropogenic (human-caused) global warming, & apparently precise predictions of sea-level rises etc. as CO2 increases. But, as a research scientist, albeit a rather inactive one these days, I know the reliability of the statistical (computer) models which yield these predictions depend totally on which factors are modelled. Leave out a vital factor, & predictions go awry. Include irrelevant factors, & you can get almost any answer you want ; just pick the 'right' one. And climate is both highly variable, & known to be affected by numerous factors, many poorly understood, & quite a few unsuspected only a decade ago. These last include vast reserves of 'greenhouse' gases (CO2, methane & others) held under ice near the poles & in permafrost areas, CO2 release from forests & deep-sea vents, the sheer magnitude of volcanic action at some past (& future ?) times, & the 'lubrication' effect of water under glaciers & other ice masses. This last effect can precipitate sudden major ice slides into the seas, where they melt & result in sudden sea-level rises. Distribution of the most potent common greenhouse gas, water vapour, is unknown for many scenarios. There are also 'lag' periods after any heating or cooling events, so that changes in either direction are not immediately perceptible. Several past & present heads of meteorological research institutions, & weather bureaus (including the Australian federal one), are on record as emphatic sceptics on anthropogenic warming. So is Nigel Calder, a long-time previous editor of 'New Scientist', who has talked sense on many topics over the years.

I have talked to many research scientist colleagues in many fields, & have yet to meet a true believer in anthropogenic global warming, for reasons similar to those listed above. The masses of believing scientists must be hiding their light under a bushel, or working for bodies that favour the current (& still new) orthodoxy. There is certainly plenty of money now available to study climate change, & a natural tendency to climb onto scientific bandwagons, & study areas which attract funding.

None of the above means we should not try to minimise pollution of all kinds, & try to perfect means of renewable energy, aim at 'clean coal' technology, & so on. Current moves to gas-fuelled power stations will hopefully be a temporary fad only, as they still release a lot of CO2, & use up a valuable resource which should be conserved for future generations, or in the short term used to power long-range vehicles instead of petrol & diesel. Natural gas is a great chemical industry feedstock, as is coal. In the medium term, 20 years or so, even the long-maligned fusion power (Always 40 years in the future, whatever the current date!) looks as if it may finally pay off, & give real clean power. Cheap electricity from any source would enable a 'hydrogen economy', with almost no pollution.

At least one model power station has been built in the US where the coal is burned to give power, the exhaust gases bubbled through 2 or more large algae-containing enclosed ponds (or domes) where the genetically-engineered algae convert CO2 plus sunlight & nutrients into a fat suitable for conversion to bio-diesel. Dried algae, with the fat squeezed out, can be used as fuel for the power station, as could timber wastes, etc., etc. The water is largely re-cycled, so the power station can be sited in a dry area, & fertilisers do not leach out into rivers or seas. Further improvement in the algae is possible, but the system is currently being scaled up to a commercial size. I can't see why variations on this scenario will not work. Certainly it must compare favourably to imitation petroleum products produced from maize & other grains, while millions of people around the world face starvation, & world food grain stocks are at their lowest level for decades. Hence the soaring wheat & rice prices. Future generations will surely regard this food conversion, plus the North American grain-fed meat animals, as tantamount to slow genocide of the third world. Perhaps a few million dollars should be spent to make some of these highly efficient algae & yeasts tasty, & appealing as a flour substitute. Some are already high in protein, & genetic engineering can easily modify the amino acid composition

to almost any desired outcome. Nearly 30 years ago I went to a U of Qld seminar to hear a friend talk on his seal research, & someone else gave a fascinating talk on protein deficiency in certain highland New Guinea tribes that lived almost entirely on carbohydrate foods like sweet potatoes. Their young women rarely reached puberty before 25 or more as a result. One exception was a tribe apparently subsisting on the same diet, but with normal-shaped girls (the others had figures like pretzels) entering puberty in their mid-teens. The difference was due to some nitrogen-fixing microbe in the latter tribe. I can't remember the precise details.

Local Rainfall : Lest reports of record rainfalls along the Qld coast, & almost continual rain last summer in FNQ (Far North Qld for foreigners), lead you to visualise me living in a green zone of full dams & contented livestock, let me disenchant you. Oxley Creek, at the bottom of my block, has not run for almost 4 years. It used to supply all my garden & livestock water. Until 1995, it had not only run but flooded its banks at least once, & usually several times, every year since 1910. Local records are less comprehensive before that date. Conditions here now alternate between green drought & the more common brown-white variety., now setting in again as the last 40 days have been totally rainless.

The Logan River, 7 km away, flooded 3 months ago from rain which drenched northern NSW (over a metre in 24 hours) but only fell on a 20-km coastal strip in Qld. We got 4 mm. Parts of inland Qld got useful rain recently, & Emerald got 950 mm in a day a little earlier, & the local big irrigation dam (second biggest in Qld) sited in a gorge filled to 350% of capacity. Rockhampton, downstream, flooded of course. Carnarvon Gorge, a very scenic National Park that I am sure many of you have visited, had a temporary wall of debris dam the gorge over 35 m deep. When it let go it scoured the main gorge clear of its,famous ferns & other vegetation. The side gorges are apparently OK. I hope the huge ancient *Macrozamia moorei* cycads have not suffered.

Most of Qld is still drought-stricken, & Brisbane & Toowoomba are still desperately short of water. I am not on reticulated water, & rely on a bore which allows me to use 1 hose for half an hour daily, plus washing-machine water. The bore water is saline, with Ca & Mg as well as Na, but most native plants don't seem to mind it too much. Roses die if on it for over a month.

My 2007 rainfall of 628.5 mm (25.1 inches in 81 falls) was higher than the previous year, but just over 1/3 of our 'average' of 1150 mm (46 inches) for many decades prior to 1995. None of the past 10 years has reached 50% of the average of the previous 85 years. To those of you in southern NSW, Victoria & SA, 15 to 25 inches may sound reasonable, but remember the evaporation level is far higher here, & our plants are used to higher rainfall spread fairly evenly over the year, unlike the south or far north of Australia. My soil here is about 18 inches of infertile sandy topsoil over an infertile clay subsoil, but add water & fertiliser & I can grow almost anything, frost permitting.

Local weather in general ; Late August 2007 saw record rainfalls of 750 to 850 mm overnight on the Sunshine Coast & Rainbow Beach. September-October & the first week of November was a little cooler than usual, but temperature maxima for the second week of November were below 20 degrees (35 plus is more usual), & the rest of November cool, often 25, with December & January alternating between warm days to 32, & cool down to 20, but none of the usual 35 plus (often well over 40, in bursts, in normal years). February was cool, usually below 30, & not above 33, & March was entirely below 30. For Brisbane, & S-E Qld in general, this March was the coldest & driest on record, with the first March frosts ever (in Stanthorpe). Townsville had zero March rainfall. April has also been cool, & also the coldest April on record, with the 29th the coldest individual April day on record, with a frost here more than 2 months earlier than usual. May to date (I am writing on the 28th) has also been cold, but not frosting much here ; mainly minima around 2 or 3 degrees.

Plant behaviour : I would love to get reports as to how the more tropical palms fared around the country this past year or two. At my place, the more delicate plants probably died of drought last year. I congregated a number of my ferns in a single site a year ago, & moved my sole *Caryota zebrina* (from P.N.G.), several walking-stick palms & several of each of *Laccospadix* sp. Mt. Lewis, *Archontophoenix maxima* & *Livistona benthamii* nearby, where all got a lot more water than elsewhere in the garden. I have found the single-trunked Mt. Lewis form of *Laccospadix* needs a lot more water than the common clumping form, & I lost even what I thought were well-established plants of the former to the drought. Except in my wet fern zone, I also lost all *Archontophoenix* species planted in the last 5 years. *Dypsis pembana* planted nearby were fine. I don't know if the *Livistona benthamii* would have survived if not near the fern zone, but they come from very wet spots in the wild. All my other *Livistona* spp. were fine.

Notes from 'Palms & Cycads' journal : The Dec.2006 issue, No.93, contains an article by John & Jeanne Price, pp. 26-27, on a newly discovered population of the beautiful but slow-growing palm *Oraniopsis appendiculata* , which stays trunkless for many years, a few km north of Tully . They have found garden specimens at their place on the Sunshine Coast respond well to a zinc & manganese spray (Manutec R). The same issue contains an article by Gary W. Wilson, pp. 13-15, on the harvesting of seeds of *Cycas media* by the indigenous inhabitants of the Qld Wet Tropics. He comments that the *C. media* seeds are less toxic to humans than those of the other 2 local cycads, *Bowenia spectabilis & Lepidozamia hopei*, & become less toxic with time, & once the seed coat colour indicates ripeness they are safe enough to allow them to be eaten after treatment. They are also much more readily available. His earlier (2002) research on *Bowenia spectabilis* showed this cycad has less than '4% of plants produce a female cone in any year', & local botanists have commented how infrequently they see one.

The same issue contains an article by Monty Anderson, pp. 16-22, entitled 'Garden of the Fat Grey Cat'. Monty is greying these days, & used to be a NT Treasury official, but wasn't too fat last time I saw him. He has a fabulous 2 ha garden 35 km S of Darwin that is bisected by a seasonal creek, & within a wet season seepage zone so that nearly all his plants are in raised beds. He has a great collection of native & exotic cycads, & also many Pachypodiums & grasstrees. The latter are little used around Darwin, as they rot out in the "Wet" if not in raised beds, so local gardeners believe they can't grow them, as they don't see them in either gardens or in the wild (did see them in one nursery recently). Under Monty's conditions, his cycads grow best when 'treated as wet rainforest plants', & given plenty of water & fertiliser. 'Most do best as dominant vegetation in light shade or full sun.' 'Plants from higher altitudes, which experience winter rain, will not grow' for him. Many lowland cycad species 'grow happily in soils that are waterlogged for weeks on end.' *Lepidozamia* spp., & a few Zamias & Dioons, prefer 60 to 70% shade. 'White louse scale infestation is usually a sign that a cycad is too shaded'. Regular watering increases the rate of coning & the wax coating that gives the blue leaf colour to some species. The high humidity, frequent rain & high temperatures of the "Wet" tend to remove the wax. He also mentions that native '*Cycas* spp. are more difficult to transplant (than exotics) because of their greater susceptibility to fungal infections. This may be caused by one or both of the following. Their roots are different being more woody & longer …., probably an adaptation to Australia's dryer climate …..The caudex is also deeper in the ground.'

Perhaps I should note that ALL tropical cycads that tolerate seasonally waterlogged conditions in the tropics seem to be fussy, sometimes very fussy, about very good drainage in Brisbane & further south. The exotic *Cycas revoluta,* & to a lesser extent *Cycas taitungensis,* will stand wet feet for a while, but not indefinitely. *Cycas cairnsiana, C. conferta & C. calcicola* are particularly difficult, & also have seedlings that rot off very easily, as do those of the Kimberleys species *C. basaltica, C. pruinosa & C. furfuracea.* I suspect the cycas from Arnhem Land would react similarly, but have never had enough seedlings to risk experimenting.

The January 2007 issue of the same magazine (No. 94) contains an article by John Price, pp. 24-25, on the continuing saga of the link between ALS- Parkinsonian dementia complex (a form of motor neurone disease), eating flying foxes & *Cycas micronesica* in Guam. As I mentioned in an earlier newsletter, the BMAA level in the cycad seed is greatly concentrated in the flesh of the flying foxes that feed on them. Cooking cycad flour has little effect on the BMAA neurotoxin level. BMAA is suspected in cases of dementia outside Guam.

Web site : It is nearly operational at long last, but still invisible until I clear up a couple of glitches. The address is www.rathiesrareplants.com.au , & I would like any images of Australian palms & cycads that members would care to send me via email.

Finale : June is here, & it is actually raining ! My rainfall for the first 5 months of 2008 was 333 mm in 40 falls, most of it in January. A couple of inches. On the 5th there is the book launch of my major excuse for neglecting other things for the last year, the revised & updated version of 'Mangroves to Mountains', written by myself & 3 other people. It is a field guide to the plants of S-E Qld., with over 2700 colour photographs of over 2200 species, published by our local (Logan River) branch of SGAP. Only a few palms & cycads in its 544 pages.

In the near future I will visit the N.T. & try & take some better photographs of some of the Top End brachys, palms & cycads. Best wishes to everyone for the coming financial year.