WHIRRAKEE

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MONTHLY NEWSLETTER OF THE BENDIGO FIELD NATURALISTS CLUB

WHIRRAKEE, VOL. 5 No. 1 JANUARY/FEBRUARY 1984

Monthly Newsletter of the Bendigo Field Naturalists Club.
Whirrakee takes its name from the Whirrakee Wattle (Acacia williamsonii) which is virtually endemic to the Bendigo Region.

CONTENTS

COVER PHOTO

Golden Pennants (Loudonia behrii) at Jackass Flat, in a mass display typical of many such scenes in the Bendigo bushland this season.

Photo: Geoff Gerdsen

Cover Design: Graham Hill

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Deadline for next issue is Wednesday February 22nd.
(Typed contributions are preferred, but if this is not possible, then please make every effort to use neat, legible hand writing or printing.)

 All back numbers are available from the Editor at a cost of 50 cents each. (Complete sets of Vols. 1-4 are available for $5.00 per volume plus postage.)

- EDITORS PAGE -

"Eucalypts of the Bendigo District"

As most members will know by now, the club's first book, "Eucalypts of the Bendigo District", by Don Franklin, John Lindner and John Robinson, was published in December. A first batch was made available by the printer in time for the Christmas Social, at which I had the pleasant duty of performing an informal launching of the book.

Our first book is a publication we can be proud of, and it has been well received by those who have seen it. The authors, Graham Hill, who designed the cover, and prepared the map, and the printers, D.G.Walker Pty. Ltd., have combined to produce a most attractive and professionally presented publication. Special thanks are due to Leon Costermans, author of "Native trees and shrubs of South-eastern Australia", and his publishers (Rigby Publishers Ltd.), for permission to use the relevant illustrations from his book. Thanks are also due to the many people who provided information and/or comment on the manuscript, each of whom contributed in some way to refining the accuracy of the text. The result has been a scientifically worthwhile addition to Victoria's botanical literature, which will enable users to identify the eucalypts of the Bendigo region. However, the book does not claim to be the last word on the subject, and advice of any additional species, new distribution information for the recorded species, or any errors, would be appreciated.

Promotion of the book has been fairly low key so far, because the club has been in recess over the holidays, and the Committee is not due to meet until February 6th. However, we have good cause to be grateful to Bill Holsworth, who undertook to distribute copies to the Bendigo bookshops, and to Graham Hill, who has sold many copies privately. I have distributed some further copies myself. The book is now on sale in Bendigo, Castlemaine and Ballarat. To keep the unit cost down to a reasonable level, we had 1000 copies printed. About 200 have been sold so far, but it will need to be promoted actively if we are to recover our outlay. It is therefore important that the book be placed in Melbourne outlets. If any members have Melbourne contacts who they think could help in this regard, could they please let us know.

The cost of the book to members is $2.50, or $3.70 posted in a padded bag, (within Victoria). For non-members the cost is $3.50, or $4.70 posted in a padded bag (within Victoria).

New Groups

The Mammal Survey and Bird Observers Groups have become an integral part of club life since they were formed in 1973, and have provided a much appreciated outlet for those members with special interests in those fields. Suggestions that there should be a Botany Group as well have now been translated into action, and the inaugeral meeting of this new group is to be held at Rob Watkins home, Marnie Rd., Kennington, on Friday February 10th, at 8.0 pm.

Plans are also under way to form a Conservation Group, on the initiative of Don Franklin, who has been concerned that the B.F.N.C. has not taken as active a role as it could on conservation issues. A draft constitution defining the aims of the group, and its relationship to the parent club in matters of club policy, is to be considered by the Committee at its first meeting for the year, and an announcement of the first meeting of the Conservation Group should appear in the March Whirrakee.

Continued on page 18.

THE NATIVE PLANTS OF A DAIRY FARM

by Donald Franklin

The farm described in this article is decidedly not the sort of place that attracts naturalists. Its 140 acres are mostly covered in lush, irrigated pastures of clovers and rye-grass. Cattle, fences, channels and drains set the scene. Neglected places carry a rank growth of grass and weeds. There are few trees; some that were planted years ago, and only eight original eucalypts. The latter sport many dead branches, and are struggling to cope with rising water tables. The gaunt remains of others tell of failure to cope with change. Definitely no place to go searching for native plants, or so I thought.

The farm, in the heart of an intense irrigated dairying area at Bamawm, 16 km north-west of Rochester, held a special incongruity for me. It is situated in the midst of the Northern Plains; plains that I love for their spaciousness and quiet. Where, even with fences and paddocks of wheat, the spirit of the mighty Australian savannah, with its long dry grass and mirage-like clumps of stunted box trees on the horizon, lives on. Yet this farm was contrary to all that I loved about the Plains; green instead of yellow, wet instead of dry, cramped with fences instead of spacious, intensive in an environment that is in spirit extensive, grossly marked with irregularities like channels instead of subtly textured, constantly developing when the only appropriate change is that of the seasons. The incongruity goes further. I had, before ever seeing the farm, listened to John Hargreaves (the present proprietor) yearn to return to the land, this land, and had felt a kindred feeling. Yet it took a long time, after seeing the farm, to grasp how one could yearn for this sort of land.

But there I was, living on the farm. And like the obsessive, irrepressible naturalist I am, I decided that the least I could do was to get to know the weeds. Maybe, I thought, ther'd be the odd native plant still hanging on, or even a few that might actually like this alien environment. There were fifty-two species in fact.

Original Vegetation

The Bamawm area was occupied by squatters in the 1840's, possibly as part of the 'Restdown Plains' station, centred on what is now Rochester. In 1866 the land was put up for sale in 320 acre blocks. The Millewa Irrigation Trust was formed in 1890 to irrigate Bamawm and surrounds, but sub-division for irrigation did not occur until the 1910's. The water was initially used for fruit-growing, and in 1920 the Rochester newspaper stated that 'Bamawm as a fruit-growing centre is destined to knock Mildura into a cocked hat'. It was not to be. A glut of fruit and the distance to the canneries tipped the balance in favour of dairying, and for several kilometres in every direction from Bamawm, and much further in some, dairying is now almost the sole agricultural activity. (Most of this paragraph is summarized from Sue Thomas' history of Rochester and district, 'Covered With Dust and Troubled With Mud'.)

No bush remains in the Bamawm area. So total has been the destruction of native vegetation that piecing the picture together involves a fair amount of careful conjecture. In two places, several miles from the farm, there are small areas of remnant woodland on private property. Roadside remnants help a little, but clearing, soil disturbance, grazing and runoff irrigation water have taken a great toll.

THE NATIVE PLANTS OF A DAIRY FARM continued

There are few, if any, places where the soil has not been turned. As a community, native ground flora just doesn't exist. Just here and there a remnant species or two still has a tenuous hold. Scattered trees left on farms (some farms don't have any!) provide the best clues.

The eight remaining original trees on John and Denise Hargreaves' farm consist of four Black Box and four Grey Box. Black Box is the most frequent tree on adjacent farms. There are patches of Yellow Box in the district. An occasional Buloke is to be found. This species is far more common in the dryland farms a few miles away. I suspect that it may have been relatively more plentiful in the irrigation area in times past, but has succumbed to rising water tables more rapidly that have the euclypts. Slender Cypress-pine appears even more susceptible. A stand about 5 kms from the farm, the nearest I have seen, is in a terrible state, being subject to irrigation. The only other tree I've located is a single specimen of Willow Wattle.

Doherty's Pines Flora Reserve, close to Rochester, is a valuable but forlorn remnant of the Plains' vegetaion. Covering only ten or so acres, this mixed woodland of Slender Cypress-pine, Buloke, Grey Box and Yellow Box is fading fast. Since irrigation began in the immediate surrounds in the past decade or so, many of the pines have sickened, and some have died. The two events are probably linked. I have little doubt that native pines were once far more widespread on the Plains than current evidence would suggest, occupying red loam rises. A portion of Hargreaves' farm consists of a red loam rise. Elsewhere, the soil varies from a fertile dark loam through a yellow clay-loam overlain by a few inches of brown clay-loam topsoil to the sticky black clay so typical of Black Box depressions.

Sue Thomas gives a perspective on the arrangement of these trees, as seen by the pioneers. 'The north and west of Rochester was largely treeless but with belts of stunted Box trees following watercourses where water ran occasionally after heavy rain. In some depressions which hold water for a long time there were patches of Red Gum and frequently Bul-Oak fringed the other timber. The rivers were lined with Red Gum and their floodplains grow Red Gum and Box while Murray Pine grows on the river sandhills. Diggora and southwards was a forest of Grey and Yellow Box which had to be cleared before the land could be cultivated.'

Diggora is ten kilometres west of Rochester and eight kilometres south of Bamawm, placing Bamawm well into the grassland belt. The 'Box' trees referred to are Black Box, and in the Bamawm area at least they lined depressions with no outlet, rather than watercourses. The reference to depressions of River Red Gum is interesting, as I've seen no evidence of them around Bamawm. Perhaps the trees have all been cleared and land-levelling combined with the provision of drainage channels has removed the evidence of suitable sites.

It seems to me that Bamawm was actually in the transition zone between the woodlands of the south (the 'forests' referred to by Sue Thomas, a remnant of which still exists as roadside vegetation along the Northern Highway between Elmore and Rochester) and the treeless plains of the north. Vast treeless areas can be seen around Roslynmead, 25 km. due west of Echuca. The presence of Grey Box on the farm and a Yellow Box grove near the township of Lockington precludes a total grassland environment on the rises. The picture emerges of Bamawm vegetation consisting of a patchwork of internal drainage depressions wooded with Black Box, surrounded by slight grassy rises with scattered Grey Box, a few Buloke and possibly Slender Cypress-pine. Woodlands of Yellow Box grew on the more fertile soils, whilst the species also occurs scattered through stands of Grey Box and of Black Box.

THE NATIVE PLANTS OF A DAIRY FARM continued

The Wimmera-type grasslands that once stretched intermittently from the Darling Downs in Queensland to the Victorian Wimmera, occupying space on the plains just inland of the Great Divide, were dominated by Plump Spear-grass, Wallaby-grasses and Native Oat Grass (R.M.Moore, editor, and author of the appropriate section in 'Australian Grasslands'). The latter, Moore notes, has been eliminated except where there is complete protection from grazing, whilst the others have been much reduced. Plump Spear-grass and two species of Wallaby-grass still occur on the Hargreaves' farm as remnants of a bygone era.

The grassland environment, with its often rich array of accompanying herbs, has been even more completely annihilated than the woodlands. Heavy grazing favours annuals at the expense of the once dominant perennial grasses. Soil 'improvement' encourages exotics. The land has been cultivated: pasture and crops sown. And finally, irrigation upset the cycle of the seasons and further encouraged domination by aggressive annuals from wetter climes. On the Hargreaves' farm, I found only one native grass in formal pasture - windmill grass - and that only in a paddock where salty soil formed a hardpan, creating conditions too dry, even with regular irrigation, for the preferred pasture plants.

If Plump Spear-grass and the two Wallaby-grasses are good indicators, then the remnant flora of the grasslands is largely restricted to those few small places on the dairy farm that are not watered, not often grazed (and then only lightly) and which have not been repeatedly disturbed. The native plants on Hargreaves' farm, however, are far from restricted to such areas, and some are obviously adventives rather than remnants. This point is taken up again later in the article.

One thing seems certain. Shrubs were never a major feature of either the woodlands or the grasslands. There are no native shrubs remaining on Hargreaves' farm, excepting some low saltbushes. In spite of fairly extensive specific searches of backroads around Bamawm, I have only been able to locate five species of shrubs. Golden and Gold-dust Wattles are the most common species, followed by Sweet Bursaria, Chinese Scrub and Water-bush. The first four are much more abundant around Bendigo. Only Waterbush is truly a plant of the Plains. This spreading, two metre high shrub is closely related to Sugarwood and Boobialla. I located only one clump, bearing a few small white flowers when I found it in November. It is considered to be a rare species in Victoria.

Botanical names of plants mentioned under 'Original Vegetation'

Botanical names of plants found on the farm are listed at the end of the article. Many of the following are not recorded for the farm.

Black Box	Eucalyptus largiflorens	Myrtaceae (myrtle family)
Boobialla (not around Bamawm)	Myoporum insulare	Myoporaceae (emu-bush and boobialla family)
Buloke (Bul-Oak)	Casuarina luehmannii	Casuarinaceae (she-oaks)
Chinese Scrub	Cassinia arcuata	Asteraceae (daisy family)
Gold-dust Wattle	Acacia acinacea	Mimosaceae (wattles)
Golden Wattle	A. pycnantha	" "
Grey Box	E. microcarpa	Myrtaceae (myrtle family)
Native Oat Grass	Themeda avenacea	Poaceae (grasses)
Plump Spear-grass	Stipa aristiglumis	" "

THE NATIVE PLANTS OF A DAIRY FARM continued

River Red Gum	E. camaldulensis	Myrtaceae (myrtle family)
Slender Cypress-pine (Murray Pine)	Callitris preissii	Cupressaceae (cypress family)
Sugarwood (not around Bamawn)	Myoporum platycarpum	Myoporaceae (emu-bush and boobialla family)
Sweet Bursaria	Bursaria spinosa	Pittosporaceae (pittosporum family)
Wallaby-grasses	Danthonia spp.	Poaceae (grasses)
Waterbush	Myoporum montanum	Myoporaceae (emu-bush and boobialla family)
Willow Wattle	Acacia salicina	Mimosaceae (wattles)
Windmill Grass	Chloris truncata	Poaceae (grasses)
Yellow Box	E. melliodora	Myrtaceae (myrtle family)

A Patchwork of Habitats

In destroying habitats, man has crested new ones. True, they tend to be less stable and less supportive of native wildlife. Many, such as irrigated pasture or the channel edge environment, are directly dependant on constant work by man. But habitats they are, and plants, some natives amongst them, are not tardy in exploiting the opportunities.

First impressions are that the irrigated farm lacks diversity of habitats. From a birdo's point of view this is probably true. A dense sward of pasture sets the scene for domination by starlings, sparrows, ibis and magpies. Only a few species, such as zebra finches, are able to squeeze into the gaps - the odd places that carry dry grass and seeds. Plants, in contrast, have much smaller living spaces, so that even such localized features as a few square metres of salt-burnt ground constitutes a new and different place for a different species to dwell. With this perspective, the irrigation farm takes on a new light, for rarely is such diversity crammed into such small areas. Areas with a rainfall of 15 inches per year (the natural rainfall) are close pressed by areas with a water supply equivalent to about 50 inches per year, distributed ideally for plant growth. There are many spots that receive occasional watering only; others that are regularly flooded. Channels provide permanent shallow water and permanent mud sites. There are boggy sites and well-drained ones. And in one respect, the dairy farm has a degree of variety rarely if ever afforded to a dry farm or to the bush - variability in grazing pressure. Because of the intensity of production and the fussiness of dairy cattle, the emphasis is on top quality pasture. Some sites that are not watered are lightly grazed or even ignored. A dry strip on the far side of a water channel may not be worth the trouble to graze. Lest the point seem trivial let me point out that at least one native plant, the Yellow Wood-sorrel, and several aliens, seem to benefit from the reduced competition induced when cattle eat the more palatable species.

The best pasture, well-drained and regularly watered and consisting of sown White and Strawberry Clover, Perennial Rye-grass, Paspalum and lesser amounts of other alien grasses, is the one habitat in which I found no native plants. As conditions departed from the optimum farming situation, so the numbers and variety of natives increased.

THE NATIVE PLANTS OF A DAIRY FARM continued

Poorly drained areas of pasture contain Blown Grass, a native with a delicate, broadly branched, sparse stalk with tiny seeds on the end. The check-banks between irrigation bays, raised a few inches above the water so that moisture was available chiefly from below, are one of the homes of that versatile little perennial, Yellow Wood-sorrel, the miniature, native version of Soursob. Channel banks, accessible to stock, but high and dry, and supporting growth often too sparse and distasteful for a dairy cow's attention, provide an opportunity for Wallaby-grass and the yellow-flowered Variable (Dwarf) Sida. Several small paddocks, once home for the bulls, but now closed off for tree planting and only occasionally watered, are the sole localities on the farm for several native plants - two species of cudweed and the summer-growing annual Clammy Goosefoot. Shallow channels that retained no water but remained muddy between irrigations support Variable Flat-sedge, Water Couch and Water-pepper, all summer-growing annuals, as well as the two small prostrate mud-dwellers with minute flowers - Swamp Crassula and Waterwort. Tall Flat-sedge is fairly common but restricted to the edges of deeper channels with more or less permanent water. Cumbungi prefers permanent shallow water, whilst three species of free-floating plants occurred only on dams and the stillest of channels.. These were the fern-like Pacific Azolla and two tiny Duckweeds.

Perhaps the most important habitat for native plants is the least disturbed of all, a dry channel bank on the far edge of the property. This has probably not had any soil disturbance since the channel was built many years ago, and is only grazed when a few of the neighbour's cattle break through the fence. I noted fifteen species of natives (and three aliens) nowhere else but here, and a few similarly dry, rarely disturbed and rarely grazed roadside sites. Amongst them is the metre high, elegant Plump Spear-grass, so named for the way the husk is swollen around the seed and for the spear shape of the husk and seed combination. Woolly New Holland Daisy, a shrublet with small mauve flowers and a dandelion-like puffball fruit, is abundant in one of these ungrazed areas, though quite absent elsewhere. Two of the most showy-flowered, delicate perennial herbs I found nowhere else - and only one plant of each even there - a Bluebell and the Pink Bindweed, the latter a twining plant clinging to grass stalks.

One habitat in which natives might have been expected to do better than they have, is salty areas. These consist of a few areas that are beyond the reach of irrigation water yet only a fraction higher, so that plant roots are well within the zone of the temporary, post-irrigation water table; and one paddock which had been very salty but is now being restored to full productivity. The worst scalds, where no plants grow, are only a few square metres at a time and frequently occur on narrow checkbanks between irrigation bays. The bare areas have caked hard, and when broken with a pick reveal a layer of white salt several inches below the surface. Around the edges of these, the most salt-tolerant plants grow. Three natives and a larger number of aliens are involved. The ubiquitous Couch is one native; Coast Sand-spurrey, which in spite of its name is as much at home in salty areas of the inland as by the coast, is another and probably the most salt-tolerant. The third native is Windmill Grass, so named for its radiating branches on the end of the seed stalk. It is probably the least salt tolerant of the three.

Native saltbushes are well represented on the farm, with seven species. However, though many saltbushes are very salt tolerant, the farm species are not notably so.

THE NATIVE PLANTS OF A DAIRY FARM continued

Several of the farm's saltbushes are widespread in non-salty districts such as Bendigo gardens, roadsides and even in the bush, and the remainder seem to require only a faint trace of salt in the soil - insufficient to discourage the plants that would otherwise and do occur. On the farm, native saltbushes are a feature of ungrazed areas. This is not surprising, as six out of seven are perennials (some even shrubby) as well as succulent or tasty, and thus first in line for elimination with intense grazing. It is probably for the same reason that salt-tolerant members of the family have not taken advantage of saline environments on the farm.

The diversity of habitats is illustrated not only by the fifty-two native plants, but also by the aliens, which number approximately 100 species.

The 'Nativeness' of the Natives

Many of the native plants, especially those of wet spots, have undoubtedly invaded the new habitats provided by an irrigation farm. Most of them have moved only locally, from Murray Valley swamps or the banks of the Campaspe River, or at least there is a lack of evidence to the contrary. Plants requiring permanently moist soil or free water cannot have been present on the farm prior to the advent of irrigation.

Water-pepper is one such plant. It can be found growing in natural habitat along the banks of the Campaspe River, which is twelve kilometres to the east. On the farm it is to be found in several dense patches, inhabiting the boggiest of pasture and muddy channels and drains. Water-pepper is an upright herb to about eighteen inches, with a nodding spray of insignificant whitish flowers on the end of the single branch, and a hot taste. It is closely related to the common weed 'Wireweed' (Polygonum aviculare) and is in the same family as the docks.

Cumbungi, the Duckweeds and Pacific Azolla are but a few more of the plants that are unlikely to have survived in the area before man's provision of permanent mud or water.

Amongst the fifty two species that I've listed as natives are six that some or all Victorian lists do not accept as such. One of these, Golden Wreath Wattle, a tall shrub or small tree that bears orange flowers in late spring, has been introduced from Western Australia and is now well established in the wild in parts of Victoria including by the Mitchell Street Bridge in Bendigo and on the farm. The other five were possibly, or in some cases definitely, not present in Victoria when European man arrived here, having since made their own way here from elsewhere in Australia, utilizing niches created by man. I have deliberately included them to emphasize the fact that in such a disturbed environment, most of the natives are in some sense aliens. Some may have moved ten metres, some 12 kilometres from the Campaspe River, some a hundred or even a thousand kilometres, but all have adapted to new, man-made situations. State borders mean nothing to plants.

It is no mere co-incidence that these five are all summer-growing plants, some of which are specifically known to have expanded from northern Australia. In that area, summer rain is the norm. Here it is less substantial and unreliable. Man, by irrigating and by making roads which concentrate runoff of rainwater, has created new opportunities for summer annuals and warm-season perennials.

THE NATIVE PLANTS OF A DAIRY FARM continued

The five plants are Caltrop, Purslane, Early Spring Grass, Couch and Bladder Ketmia. Caltrop, one of several plants often called Bindi-eye, will be all too well known to some for its perniciously spiny fruits. It is a vigorous ground-hugging annual with wattle-like compound leaves, and prefers relatively dry situations. It is still expanding in range in northern Victoria, and has only recently arrived on Hargreaves' farm, where it is rightly treated as the worst of weeds.

Purslane will also be well known to some as a garden weed. It has succulent leaves and small yellow flowers. In South Australia J.M.Black records it (in 'Flora of South Australia') as a native of the north of the State which has extended its range to southern pastoral areas.

Early Spring Grass may appear at that time of year in its moist homes from swamps in central Australia to wet coastal sub-tropical areas, but on the farm it appeared in late spring and summer. In Victoria it is fairly rare and prefers irrigation areas, so that J.H.Willis (in 'A Handbook to Plants in Victoria') suggests that it is an adventive. On the farm I found it growing at the high water mark in a channel, and in the lawn around John and Denise's house. Early Spring Grass resembles a delicate version of Paspalum, but has a distinctive purple bead at the base of each seed.

Couch is found world-wide, and Willis expressed doubts about its nativeness to Victoria. However 'It was certainly growing along the Murray River between Robinvale and Mildura in the 1850's' and is now widespread.

The fifth species, Bladder Ketmia, is a hibiscus native to northern Australia. Its showy red-centred cream flower is subtended by a swollen bladdery arrangement of sepals, which is showy in its own right. I found only two specimens of this on the farm.

In the strictest sense of the word, the truest 'natives' are those that were present before European man arrived in Bamawm. Without records, we can never be sure what plants combined to form the original vegetation. However, a little conjecture does no harm; if nothing else it sets you to thinking carefully about the subject and constantly reminds you of the fact of European man's devastation of our Plains' flora.

Trees and shrubs I've already discussed. It would seem that there were two fairly distinct habitats for annuals, perennial herbs and undershrubs in the Bamawm area; the dry rises of grassland and woodland, and the swampy Black Box depressions. In periods between floods, the depression flora probably reverted to grassland / dry woodland types of plants. This can be seen in parts of north-west Victoria, where a somewhat comparable situation still exists and the degree of similarity between floodplain herb flora and sand-dune flora is roughly proportional to the time lapse since the last flood. At Wyperfeld, where parts of the floodplain have not been flooded for fifty years, apart from the trees there is no difference in flora attributable directly to flooding. However, where soils change from sand to riverine clays, there is a difference attributable to the soil change rather than directly to flooding.

Since these depressions are unlikely to have filled with water often, or to have held water for long, the swamp plants would have to be ephemeral and able to complete their life cycles in drying or dry mud, or very hardy. In one part of the farm, where three of the surviving Black Box are growing in cracking grey clay, and where irrigation water flooded the area in spring 1982 but left it dry in summer, Small Loosestrife was the most prominent native.

This plant, although more or less tied to flooded areas and growing most lush with its feet in permanently moist mud, seems well able to flower in dry soils. I noticed on the farm that Small Loosestrife, which is a small annual with tiny pink flowers whose petals number 4, 5 or 6, grew prostrate and flowered in early spring on dry sites, reaching upwards and flowering several months later in wet sites. It seems a likely candidate as an original swamp plant.

Swamp Crassula, Waterwort, Poison Pratia, Common Cotula and Jersey Cudweed are further likely annual candidates. Cotton Fireweed is a widespread perennial herb that prefers moist or sometimes flooded sites but persists well when the soil dries out. It is now rare on the farm.

Blown Grass may have been present in the swamps, though I suspect it is an adventive plant since it is summer-growing and at that time the swamps are likely to have been quite dry.

As already stated, the grasslands were dominated by several grasses, of which Plump Spear-grass and two Wallaby-grasses still remain. One of the Wallaby-grasses is still quite successful on the farm, persisting in places on dry channel banks even where accessible to stock. However, in general the plants that I know as grassland or dry woodland plants from observation elsewhere, are restricted to the least disturbed sites. It is hardly surprising that remnant species should cling to the remnants of habitat. With this in mind, the candidates for original grassland plant status are Plump Spear-grass, the two Wallaby-grasses, Woolly New Holland Daisy, Sweet Hound's-tongue, all the native saltbushes excepting Clammy Goosefoot and possibly Sprawling Saltbush, Pink Bindweed, Variable Sida, Variable Willow-herb, Yellow Wood-sorrel and Quena. The last mentioned is a small annual to six inches high in the kangaroo-apple genus (Solanum), with showy purple inch-diameter flowers, which it insists on hanging obscurely downwards, and a centimetre-diameter berry.

In combination with the eucalypts and the swamp plants, this totals 25 candidate species on the farm as remnants of the original flora - a paltry remnant. Surveys of district roadsides would undoubtedly add to the list. But some may be gone from Bamawm for ever. Some might even be extinct. Who knows? Maybe the Bamawm rises were once carpeted with Red Swainsons-pea (Swainsonia plagiotropis).

To be continued next month - "The future of the farm and its native plants", and the plant list.

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IN A NATIVE GARDEN

by Tom Patullo

Over the years during which I have been interested in growing Australian native plants, I have heard and read of many methods of treating Acacia seeds before planting. Some say to soak them in hot water over-night , while others say put them in water and bring to the boil, then let soak till cold. (Reject the seeds which do not swell). Some say that the seeds must be kept in boiling water for fifteen minutes, while on a different approach, others claim that the dry seeds must be rubbed between two sheets of sand paper, while another method is to nick each seed with a sharp knife.

The purpose of all the above pre-planting treatments is to soften or break the hard outer casing of these seeds, and so allow the penetration of moisture to start the process of germination. I have heard of another method, and that is to pick the pods on the green side, before the seeds have turned black. The seeds in this case being somewhat soft, eliminates the neccessity of pre-planting treatment.

No doubt all who have expounded these ideas have had some success. But what about the seeds which fall to the ground naturally and grow? There is no doubt that this happens, as evidenced by the lovely stands of Wattles, especially Ac. pycnantha, which grace the Bendigo area.

It has been suggested to me that many seeds are eaten by birds, and some of these seeds pass right through the birds digestive system only partly digested. Thus, by the action of the grit in the birds gizzard, the seed has had the hard case softened, and so, when dropped to the ground, can germinate. In some cases this appears to be a reasonable suggestion. For example, a baby Acacia montana has appeared naturally in my garden. How did the seed get there? The nearest Ac. montana specimen that I know of is at least a mile away, on the other side of a watershed, therefore, being deposited by water is out of the question. So where did it come from?

We see that, in this case, the bird carried seed explanation is feasable. Then I look at the gully on our block and see thousands of young Golden Wattles growing, and I think there must be an awful lot of birds suffering from indigestion. So after all this discussion, the natural method of Acacia seed germination remains inconclusive.

(Editor's comment: I have seen several areas near Bendigo where Golden Wattles were badly affected by the drought, where germination has taken place this season on unburnt ground. Apparently the very conditions which killed the parent plants 'cooked' the seed in the soil, thus allowing germination without fire, which is normally necessary for extensive regeneration)

* * * * * * *

Still on the subject of Acacia seeds and birds, I think I have mentioned in former articles how the early flowering wattles in our garden, and in nearby bushland, failed almost completely to flower last winter and spring, although the drought broke in March. I consider that this is due to the fact that during the critical bud forming period (Dec. and Jan.) the trees were still under severe drought stress. All this has resulted in an almost complete dearth of the usual plentiful supply of wattle seed on the ground at this time of year. Usually there is a carpet of black seeds under the trees, but this year the ground is quite bare. As a result there are very few Bronzewing Pigeons about, and for the first time for a number of years they have not nested in our garden.

IN A NATIVE GARDEN continued

While browsing round the nurseries during last autumn and spring, looking for replacements for drought casualties, we came across some interesting varieties, one being none other than the Coolibah - Eucalyptus microtheca - a name preserved for posterity by the words of Banjo Patterson's poem, "Waltzing Matilda". According to Stan Kelly in his book, "Eucalypts of Australia" Vol.1, the words of the poem sum up some of the trees characteristics for it is a shady tree and grows along the billabongs in its natural state. It will tolerate inundation periodically, followed by long dry spells. The colour illustration on the nurserymans ticket depicts a tree of fine character with twisted trunk and limbs, both covered with vivid white bark. The ticket also claims that it is as vigorous as a River Red Gum, and superior to the Ghost Gum with smooth glistening white bark. A well grown specimen can reach to twenty feet high. It has been commercially named "Snow Queen". Our specimen has started well, and maintained good growth. This should be a good one for the Bendigo area.

Another unusual and attractive specimen is Acacia glaucoptera, well worth growing for its unusual foliage and attractive red, new growth at the tips. A fast grower in good conditions. Three Bendigo forms of Acacia are now appearing in the nurseries. I refer to Acacia calamifolia - Wallowa Wattle which grows profusely in the Melville Caves area; Acacia lanigera - Woolly Wattle, confined to the Milkmaid Flat area, just south of Spring Gully Reservoir, and Acacia flexifolia - Bent Leaf Acacia, which grows in the Whipstick. All are desirable smaller wattles for the garden.
An interesting Grevillea we came across was Grevillea intricata, a most unusual plant having fine needle leaves which continually divide into three as the plant grows, so that the grown plant, to me, resembles a tangled heap of wire netting. Flowers are cone shaped, coloured pink to white, up to three inches in length. Favours dryish conditions. Other interesting Grevilleas include Grevillea rivularis having leaves somewhat like Grev. brevicupsis and unusual flower colour; Grevillea "Poorinda Anticipation" a quick growing hybrid; Grevillea drummondii, with small tight orange flowers, and Grevillea "Austraflora Canterbury Gold" a vigorous, quick growing plant which shows good promise.

With the idea of growing Eucalypts more suited to the periodically dry year, we have planted a few Mallees. We have so far been able to obtain Eucalyptus viridis - Green Mallee, Euc. oldfieldii -Oldfields Mallee, and Euc. preissiana -Bell Fruited Mallee. So far, all are doing well.

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Erratum: In the article "Observations from Longlea, Spring 1983" by Bobbie and Allen Malone, in last December's Whirrakee, the tree listed as Acacia leucoxylon, identified by Tom Patullo, should have read Eucalyptus leucoxylon.

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INAUGURAL MEETING OF NEW BOTANY GROUP

Rob Watkins has established that there is sufficient interest among members to warrant setting up a Botany Group, and has convened an inaugural meeting at his home in Marnie Rd., Kennington, for 8.0 pm. Friday February 10th. All interested members are invited to attend, or to express interest by presenting an apology if unable to attend.

Bendigo Bird Observers Group Bird of the Night Discussion June 1983

THE EFFECT OF THE DROUGHT ON BIRD LIFE IN THE BENDIGO DISTRICT

Official rainfall for the Bendigo meteorological station for the year 1982 amounted to 210 mm, the lowest recording since records began in 1863. However, the drought really began at the end of September in the previous year, 1981, when the rain in October fell to 40 mm, November 30 mm and December 9 mm. The drought also continued into 1983 with falls of 12 mm in January and 1 mm in February. Falls of 65 mm and 66 mm respectively for March and April 1983 began the recovery.

With such low rainfalls, the normal breeding season of August to December 1983 featured a complete absence of flooding, generally very low water levels in rivers streams and larger swamps and dams, and many other swamps, dams and smaller streams completely dry or very quickly dried up. It was therefore very noticeable that there was a general lack of breeding of the water bird population, a lack of migration of water birds to Victoria altogether, and birds such as grebes and plovers, normally resident, appeared to migrate away.

Another observation indicated that because of the low water levels, stock were able to destroy reed and rush growth, thus seriously affecting the natural habitat of reed warblers, etc. Several Black-shouldered Kites, which were regularly observed in the Huntly area for a number of years, disappeared during the early part of 1982 and have not reappeared to date (January 1984). Two known pairs of Powerful Owls in the southern and eastern portions of the District apparently did not nest in 1982, and again in 1983, as indicated by observations. Generally the bush birds appeared to be very scarce, nesting was rare, and the sound of birds singing was much more quiet. During September, occasional nests were found of such birds as Blue wren, Shy Heath-wren, Yellow-plumed honeyeater, Yellow-tufted honeyeater, Purple-gaped honeyeater, Brown-headed honeyeater, Golden Whistler, Hooded Robin and Oriole. Normally the busiest nesting period is October and November, but in 1982, to find a nest in the Whipstick area during October and November was a very rare event. Still fewer nesting events were successful. Birds known to have successfully nested included a pair of Blue-faced honeyeaters who raised two young with the aid of two older juvenile birds from the previous year. One pair of Tawny Frogmouths raised three young, another pair raised one young, and a third pair began nesting, but abandoned incubation after 15 days.

Two pairs of Spotted nightjars were each successful in raising the normal clutch of one egg, but were from 4 to 6 weeks later than usual at nesting. The previous year each pair had two successful incubations, and one had, in addition, three unsuccessful attempts.

A Collared Sparrowhawk was observed to have successfully raised three young.

White-browed wood-swallows were seen on several occasions, but no nesting activity was observed.

Notable absentees in the bird population, or at best very scarce, were Mistletoe-birds, Tawny-crowned honeyeaters, Sacred kingfishers, White-winged trillers and Red-capped robins.

Observations also indicated that few, if any, Red-rumped Parrots and Eastern Rosellas nested. A known pair of Kookaburras was also observed to fail to nest.

Part of the effect of the drought on the bird-life, particularly honeyeaters, but also other insect-eating birds, would have been due to the poor flowering and short duration of the flowering of the wildflowers generally.

THE EFFECT OF THE DROUGHT ON BIRD LIFE IN THE BENDIGO DISTRICT continued

Apart from failing to breed, it is probably a natural consequence of the lack of food (insects, nectar etc.) and lack of water during the hottest and driest part of the year, that many birds, particularly the smaller birds would have died due to the drought.
One feature observed, and not necessarily a consequence of the drought, was the unusually large influx of Ravens and probably also Little Ravens, in many hundreds, and probably thousands, which were observed feeding on a large plague of Cup-moth grubs mainly infesting Yellow gum trees in large areas of the Whipstick forest.

As a postscript to the above discussion, it may be useful to add that the effects of the drought were noticeably still evident during the breeding season of 1983, despite the much better than average rainfall received for the year. The population of birds generally was much smaller than in normal years, and consequently the number of nests observed was much less than normal. The Powerful Owls again failed to nest. One Spotted nightjar also failed to nest. Few Sacred kingfishers appeared, or stayed in the Bendigo area, and as previously mentioned, the Black-shouldered kites have not returned.

compiled by Bill Flentje.

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EXCURSION TO BULLARTO RESERVOIR

Sunday - ~~March~~ 18th.
Leader: John Lindner

We visited this beautiful spot almost exactly one year ago. The reservoir, surrounded by the tall timber of the Wombat State Forest, was almost completely dry, but its thickly vegetated bed was a busy foraging ground for many birds. Both Leaden Flycatchers and Rufous Fantails were seen. This year, the water level should be much higher. Both bird and plant life should be most interesting.

PLEASE BRING

1. Warm clothes in case the weather changes. It will almost certainly be cooler down there than in Bendigo.
2. Rain coat (just in case).
3. Drinking water.
4. No fires allowed, so bring a gas stove or the like if you want to have a barbeque.
5. Binoculars. 6. Lunch and afternoon tea.

DEPARTURE: 9.00 am, Education Dept., Havlin Street.

The distance is 85 kilometres from Bendigo, via Castlemaine and Daylesford. Hence the earlier start.
For those who wish to come later, and not in convoy, proceed to the hamlet of Bullarto, approximately 10 km. east of Daylesford on the road to Trentham. 1.5 km. past Bullarto, turn left into Babbington Road, which will take you to the Reservoir.

BIRD NOTES AND OBSERVATIONS FOR DECEMBER 1983

HIGHLIGHTS

BUDGERYGAHS REPORTED IN MANY PLACES

WHITE-THROATED WARBLER AT SEDGWICK AND AT WEHLA

TWO WOOD SANDPIPERS AT WINGHEE SWAMP

At the December B.O.G. meeting, seven members gave short talks.

Don Franklin gave an account illustrated by slides of a trip to Coopers Creek and Lake Eyre in Australia's interior in the winter of 1976. Due to a series of abnormally wet years, Coopers Creek was flowing and the main basin of Lake Eyre was near full. The waterbirds encountered were diverse, and in places prolific.

Leon Ruedin gave a historical account of the Mallee Fowl in the Bendigo area. This bird was fairly common in the Whipstick mallee prior to 1850, but declined and finally became locally extinct following a wildfire in 1922. The remains of over 40 mounds have been found, and Leon showed recent and old slides of these.

Harvey Rich showed a slide of an unusual mutant, partial albino Yellow Robin. The bird, photographed at Maryborough, had the normal yellow breast but the rest of its plumage was white. Harvey also showed an interesting collection of slides to show how early morning and late evening shadows and backlighting can enhance your photographs.

Nancy Stone told of the Stones' recent holiday in south-west Victoria and the south-east of South Australia. Excellent birding and general holidaying was had in a number of places, including the Little Desert, Robe and the Lower Glenelg National Park.

Alex Stone recalled some of his boyhood birding at Woodstock West in 1919. He described the nesting of Yellow-rumped Thornbills, Willie Wagtails and Banded Plovers. The former two species were known to him as Tits and Black and White Fantails respectively.

Barbara Salter showed slides of small birds that build covered nests. She suggested that covered nests provide shelter in cold and wet weather. Illustrated were Blue Wrens, Red-backed Wrens, White-browed Scrub-wrens, Yellow-throated Scrub-wrens, Chestnut-rumped Thornbills and many others, not all of which are to be found locally.

Jurong Bird Park in Singapore was the subject of John Berry's talk. This outstanding zoo houses 7,000 birds of 350 species. A special feature is a walk-through aviary of over two acres area. This aviary contains a 100 foot high artificial waterfall, which has a flow of 8,000 gallons per minute.

Observations

When the budgerygah visits Victoria it is invariably in spring and summer. Yet no one seems able to predict in which years they will appear, and in what numbers. Even when they do come, it is not so often they reach our district, as they prefer arid and semi-arid haunts. The budgie is the ultimate 'erratic migrant' of the inland. This November has been one of the best for many years for sightings of them.

BIRD NOTES AND OBSERVATIONS FOR DECEMBER 1983 continued

Reports have come in from Inglewood, Kingower, Maryborough, Knowsley, Kamarooka, Rochester, Serpentine, the Terricks State Forest near Mitiamo and from the Little Desert. In the latter instance (a B.O.G. camp, 12-13th Nov.) numerous flocks of up to 30 birds were seen, and one pair were observed entering a hollow in a Yellow Box tree on several occasions.

More commonly seen in the district than budgies are the cockatiels. Nevertheless, they too are somewhat erratic, but are present in particularly good numbers this year.

One of the most exciting observations made at the Terricks camp was of a solitary grey falcon that flew low over two observers. This falcon is a rare inhabitant of the inland, and a very rare bird in these parts. It may be no co-incidence that a pair were seen only 4 or 5 kilometres away in August 1979. Also of note in the Terricks was the locating of four parties of grey-crowned babbler. Grey-crowns were also reported from the Newstead Golf Course.

Another infrequently seen bird in this district is the blue-winged parrot. One was noted at the Bendigo Cemetery on the 4th of November. The stronghold and breeding range of this parrot is Tasmania, coastal western Victoria, and the south-east of South Australia.

A sighting of a male rose robin at Sedgwick on the 8th of November raises some interesting questions, especially as the species was recorded in the same locality last year, apparently in August. The rose robin breeds in wet mountain areas and disperses inland in autumn and winter. By now, one would have expected them to have returned to their breeding haunts. Is this bird a malingerer or could it even be nesting?

With the fairly good rains during spring, many birds are continuing to nest. At Lyal Glen, a pair of restless flycatchers were observed to fledge young on the 23rd of October. The young remained in the area for nearly a month before departing. On the 20th of November one of the pair was noted gathering stringy bark and building another nest. Probably double-nesting by owlet nightjars was also reported. On Nov. the 9th, near Maryborough, two birds flushed from a hollow stump, leaving a third, presumably a young one, in the hollow. Twenty days later, one owlet nightjar flushed from the same hollow, revealing one white egg.

Two very important observations came to hand at the November meeting. They were of the white-throated warbler, previously observed in this district only a couple of times. The sightings were wide apart, at Wehla and Sedgwick, and on each occasion only one bird was seen. A bird generally of the wetter forest country, the two habitats involved here were undulating granite country clothed with acacias and scattered eucalypts, and a forest of box and stringybark. Both observations were made in fine, mild weather.

A striated pardalote stunned itself against a house wall at Golden Square, and after 20 minutes recovery time it was business as usual. Birds often stun themselves whilst fighting their reflection in house windows but the circumstances above are not as frequently observed.

That superb water-bird habitat, Winghee Swamp, again yielded a sighting of a rare migratory wader for the Bendigo district in the shape of two wood sandpipers. The birds were resting quietly on a slight grassy rise on the edge of the main swamp. Heavily spotted on the wings, the birds were of a greyer coloration than usual. This is only the second record of this species in the Bendigo area.

BIRD NOTES AND OBSERVATIONS FOR DECEMBER 1983 continued

Three grass whistle-ducks (alias plumed whistling duck - see Bird Notes in Whirrakee of Oct. and Nov. 1983) were flushed from the same area as the wood sandpipers, and nearby white-breasted woodswallows were feeding young. The nest was in a dead tree surrounded by water.

On swampland 16 km. west of St. Arnaud a pair of brolgas were observed in company with a pair of magpie geese. This observation is a follow up to a report in the previous month's Bird Notes. The brolga is uncommon in Victoria, whilst the Magpie goose has been virtually extinct in this state for many years.

A pair of black-fronted dotterels were noted to be nesting at Strathfieldsaye.

A nankeen night heron was observed at 'Lyal Glen' and was thought to be present due to the filling of nearby Lake Eppalock. This bird, an adult, was an exception in that most of the visitors to 'Lyal Glen' are juveniles.

At Merin Merin Swamp near Clunes many birds were nesting, including little pied cormorants and silver gulls.

On the Mooloort Plains, alongside the Pyrenees Highway is an area of swamp country where, in November, 30 nests of the little pied cormorant were found. They were in various stages of breeding. Other species breeding in this area were Australian coots, dusky moorhens and hoary-headed grebes. There were also many white-necked herons, yellow-billed spoonbills and nankeen night herons in the same vicinity.

For the third month in a row the royal spoonbill, a fairly rare visitor to our district, was reported, from yet another locality. On this occasion one was seen with a flock of yellow-billed spoonbills on a swamp along the Highway between Newstead and Carisbrook.

In early December large numbers of spine-tailed swifts were observed at Tarnagulla, apparently the first sighting this season of this summer visitor.

A pair of fuscous honeyeaters nested at Strathfieldsaye in mid-November, in a locality where they are normally only recorded as summer visitors. They have been present in the area for several months. This is thought to be an ongoing affect of last year's drought. The numbers of this species recorded in the street survey in early September (Whirrakee, Oct. 1983) may have been a similar affect.

A number of birds of prey observations were made. They included a nesting record of the collared sparrowhawk. One adult kept swooping the observer whilst at the same time carrying a small bird. Two dead little falcons were noted - one can only surmise at the cause. A pair of black falcons were observed five miles south of Serpentine. This uncommon falcon is one of our most exciting raptores when in flight and in search of quarry.

Correction to Bird Observations in last December's Whirrakee.

The new species for the district is the Banded Stilt as reported. It has not been renamed and is in fact confined to Australia (second half of second paragraph). Black-winged Stilt is the new name for the Pied or White-headed Stilt, the more common stilt in this district. Apologies.

FEBRUARY EXCURSION

Sunday February 12th

BARMAH FOREST

Note: The venue has been changed from Bullarto Reservoir, and we will visit there in March. The reason for the change is that our originally intended visit to Barmah Forest falls only two weeks after duck opening on March 3rd, and would be virtually pointless with regard to bird life .... and peace and quiet!

Venue: Barmah Forest, visiting Cherry Tree (three types of forest eucalypts and regeneration) Reedy Lake, the Glue Pot, Keys Point and Doctors Point, all of which are relatively close to each other. Bird life is very plentiful. We will be starting off from Picola, and going into the forest about 10 kilometres.

Leader: Mr. George Cunningham of Picola, who knows the forest intimately

Departure: Meet outside Education Dept. Regional Office in Havlin St. at 9.0 am. Travel in convoy, arriving at Picola between 10.00 and 10.30. Proceed into the forest. Car tour with up to six stops, and at least one long walk.

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EDITORS PAGE continued

Syllabus changes

Please take special note of the changes to the Syllabus announced in the Diary stop-press item, and detailed on pages 14 and 18.

Holiday Slides needed for Members Slide Night, February 8th General Meeting

Members are urged to select slides for a 5 to 10 minute showing at this meeting. This night can only be successful if there is a sufficient number of slides, and variety of themes. Please contact me on 46 8736, so that I can have some idea of numbers and topics.

Visit from Bob Finlay of Possum Books, also at February meeting.

Members who were present at the February meeting last year will remember the large range of natural history books on offer, at substantially discounted prices. The arrangement proved mutually satisfactory, and Bob Finlay has accepted an invitation to return this year. Don't forget your money bags if you would like to take advantage of his bargain prices.

Subscription Reminder

Many people have responded to the reminders which went out to unfinancial members in December, but quite a few still have not paid. No doubt this is at least in part due to the disruptions of the holiday season, but early attention to this matter would be appreciated. The Whirrakee mailing list will be revised for next issue, so you will need to act promptly if you wish to continue receiving it.

Eric Wilkinson, Editor and President.

BENDIGO FIELD NATURALISTS CLUB

Address for correspondence, P.O. Box 396, Bendigo 3550.

Office bearers for 1983-1984

PRESIDENT	Eric Wilkinson	7 Weatherall St. Cal.Gully	46 8736
SENIOR VICE PRESIDENT	Rob Moors	Sedgwick	39 6254
JUNIOR VICE PRESIDENT	John Lindner	Burns St., Axedale	39 7308
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LIBRARIAN	Glenise Moors	Sedgwick	39 6254
EDITOR	Eric Wilkinson	7 Weatherall St., Cal.Gully	46 8736

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Membership of the Bendigo Field Naturalists Club is open to all those interested in natural history. The membership subscription rates are Single $10.00, Family $14.00, Pensioner and children $6.00. Whirrakee subscription only, $10.00.

General Meetings are held on the second Wednesday of each month at the Conference Rooms, Department of Agriculture, Midland Highway, Epsom. Meetings start at 7.30 p.m., and conclude with supper. The Annual Meeting is held in September.

Excursions The assembly point for excursions is outside the Special Services Complex in Havlin St. East, Bendigo, unless otherwise specified. Full day excursions normally commence at 10.0 a.m. (usually on a Sunday). Half day excursions normally commence at 2.0 p.m. and may be either a Saturday or Sunday. Day or half day excursions are usually held on the weekend following the General Meeting. Campouts are held several times in a year, usually coinciding with long weekends or holiday periods.

The B.F.N.C. has two active sub-groups.

The BIRD OBSERVERS GROUP meets on the first Friday of the month at the Agriculture Department, Epsom, at 7.30 p.m.

President:	John Berry	22 Barrell St., Eaglehawk	46 9921
Secretary:	Harvey Rich	58 Dundas Rd., Maryborough	61 1698

The MAMMAL SURVEY GROUP meets on the third Thursday of each month, at 8.00 p.m. in member's homes as announced in the monthly diary.

President:	Graham Hill, 31 Curnow St., Golden Square	42 4016
Secretary:	Bill Holsworth, Nabilla Cr., Kennington	43 4063

- DIARY -

MEETINGS

February 8	Member's Slide Night (holiday slides, ets.), plus visit from Bob Finlay of Possum Books, with his considerable range of natural history books at discount prices.
March 14	Speaker: Des Hooper, Field and Game Association Topic: Wetland Conservation and Salinity, including film on Cullens Lake, Kerang.
April 11	Speaker: Frank Pears Topic: Spiders

EXCURSIONS

Sun. ~~Feb. 12~~ Mar.18	Bullarto Reservoir, east of Daylesford. Leader: John Lindner - details on page 14. Full day excursion, leaving Havlin St. at 9.00 am.
Labour Day Long W/E March 10-12	Melville Caves Campout - combined activity with Archaeological Society.
Sun. ~~March 18~~ Feb.12	Barmah Forest - details to be announced. See page 18.
Easter/Anzac Day. April 20-25	Campout on Evan Thomas' property on the Wakool River at Barham.

INAUGURAL MEETING OF NEW BOTANY GROUP

Fri.Feb.10 8.00 pm. Rob and Cynthia Watkins home, Marnie Rd., Kennington.

MAMMAL SURVEY GROUP

Thurs.Feb.16 8.00 pm. at Graham and Diane Hills home, 31 Curnow St., Golden Square.

BIRD OBSERVERS GROUP

Fri.Mar.3 7.30 pm Agriculture Department, Epsom.

STOP PRESS

After the above was typed, John Lindner advised that Des Hooper had just telephoned him to say he was unavailable in March. John has compiled a short list of possible speakers to approach, and an announcement will be made in the next issue of Whirrakee.

John also advised that he had arranged for George Cunningham of Picola to lead the Barmah excursion, and had been strongly advised by George to hold it before duck season opening on March 3rd. Therefore the Bullarto and Barmah excursions have been swapped, and we will now visit Barmah on Feb.12th (see page 18) and Bullarto on March 18th (see page 14).