

decompositum, but the amalgamation is not in all respects satisfactory.

In the second division of Polypodieæ, we have of *Polypodium* 11 species, of *Nothoclæna* 2, of *Grammitis* 2, of *Acrostichum* 1, and of *Platyserium* 2. Whilst in the former section, *Asplenium trichomanes* is common to Australia and many parts of the old and new World, we have, in the second division, *Grammitis rutifolia* common to the South West of Europe, Chili and New Zealand, and *G. leptophylla* common to the old world and the Andes of the new. From a review of the species of ferns, it seems that of the 200 known to flourish in Australia, New South Wales has about 108; whilst "of the 38 Australian genera, of which 29 are represented in this colony, no less than 29 have a general range over the New and Old World."—(Bentham.)

BOTANICAL NOTES ON QUEENSLAND.—No. I.

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In the course of many visits to Queensland during the last four years I have noted several peculiarities in the flora of that colony which will be of interest to botanists generally. Up to this time the labours of collectors have been directed to the discovery of new species, while the range or the abundance of the same has been little noticed. Now that the grand work of describing and cataloguing has been accomplished by the illustrious botanists Bentham and Mueller, humbler laborers may step in to add to the account of knowledge: This is the purpose of the present notes. I have found for instance that the spread of tropical plants south of the tropical line occurs to an extent which is hardly realized by those who have not visited the place. I shall begin to illustrate this by observations made upon the Burnett River, Lat. about 25°. My travels extended to about

35 miles from the mouth of the stream which is all occupied by a generally level country of gravel or volcanic soil. The latter is wooded with thick forest, known here by the local name of scrub, but as it is formed by high trees closely matted by vines and creepers, it must not be confounded with what is termed scrub in other colonies or even other places in the colony. The mouth of the river is bordered by boulders of doleritic lava, not very vesicular and but little decomposed. To the south there is a small conical hill, three miles distant, which is entirely basaltic and may be the source of the lava. All round the light house there is a dense growth of *Sorghum fulvum*, Beauv., and it extends over the open ground to the edge of the forest. It is a tall not very stout grass attaining sometimes six to eight feet high and here makes the ground appear like a dried marsh. The panicles are of a rich brown colour and very ornamental. The species has not been hitherto recorded south of Keppel Bay. It is also found in tropical Asia, from Ceylon to the Archipelago and in South China and Japan. A closely allied genus—*Chrysopogon*, covers all the alluvial flats further up the river, this is *Chrysopogon parviflorus*, Benth., a species very widely distributed from Carpentaria to Victoria. It is called here "scented grass" on account of the peculiar smell emitted by the young flower heads when rubbed between the hands. It is not esteemed as a fodder plant. Bentham and Mueller say that it is probably found in India and New Caledonia.

Another marked feature of the banks of the Burnett on the cleared ground is the abundance of *Phytolacca octandra*, Linn., this is closely allied to an American plant which has long been cultivated in Europe and is known as the Mexican Verbachina. It has established itself pretty extensively in the neighbourhood of Sydney and Melbourne, but I do not know that it has been recorded from any part of Queensland. On the sides of the Burnett it covers the cleared volcanic ground very thickly in erect herbaceous plants from four to six feet high. It may be as

well to mention that the dark purple berries of a kindred species or variety are used for a tincture which is much valued in America as a remedy for rheumatism, and was once a celebrated remedy for cancer. The root is an emetic and cathartic, and the young shoots when well boiled are eaten as a vegetable. In the West Indies the leaves are used like washing soap.

Another weed which literally covers the land in fallow as closely as grass, but growing up into a tall straight thicket five or six feet high is a species of *Erigeron* (*canadensis* or *linifolius*). It goes by the name of cobbler's peg, from the ready way in which the erect fragments of old stems penetrate the shoes.

The agricultural land is nearly always the cleared forest on the banks of the rivers and this is not upon the alluvial banks of the river so much as the red volcanic soil which follows the south bank of the Burnett in a belt varying in width from a few hundred yards to a mile. It has evidently come from a small rounded hill near the sea coast which is surrounded with fragments of scoriaceous lava. Usually the red soil is quite free from stone or scoriæ, from which I suppose that the deposit is a thick flow of the volcanic mud which is always connected with eruptions the forest is very dense and of the kind usually called scrub in Queensland near the coast. This scrub is mainly distinguished by the absence of that Australian aspect which the presence of Eucalypts, Acacias, and Proteaceæ would give it. They are almost totally wanting in these forests which are composed of several species of *Ficus*, *Harpullia Hilli*, *H. pendula*, *Diploglottis Cunninghami*, *Cupania anacardioides*, *C. semiglauca*, *Dysoxylon Muelleri*, *D. rufum*, with here and there immense trees of *Flindersia Oxleyana*. Underneath these trees there is a tangled growth of brushwood, at least near the edge of the forest, but when one penetrates any distance where the growth of tall trees is very thick and the light obscure, the ground is encumbered with dead logs and the humus from decayed leaves which only

supports fungi, lichens, mosses, and a few scattered ferns of which the most common are *Pteris tremula* and *Adiantum hispidulum*. The common grass is *Oplismenus compositus*. This I have found, I may say, universally diffused through these and similar forests.

Many of the tallest trees are bound together by certain creepers which form vines or masses of leaves and flowers. The principal of these are *Tecoma australis*, and *T. jasminoides*, *Clematis glycinoides*, *Rhipogonum album* (a thorny climber of the lily tribe) *Flagellaria indica*, *Eustrephus latifolius* (the bulbs of this are excellent eating), *Geitonoplesium cymosum*, *Jasminum didymium*, *J. racemosum*, *J. lineare*. Other trees more or less common in the forests of the Burnett, are *Marlea vitiensis* the only species of the genus and order in Australia, but one which is found in all the forests of the coast and extending to New South Wales. *Gardenia chartacea*, *Castanospermum australe*, *Apnanthe philippinensis*, *Canthium lucidum*, *C. citriobatus*, *C. multiflorus*, *Kibara macrophylla*, are interspersed with many other species which were not in flower or otherwise indeterminable by me. The edge of the scrub has a thick growth of *Rubus rosæfolius* which produces a small tasteless raspberry, and the growth of the weed *Verbena bonariensis* is also very thick. I do not attempt to give an exhaustive list of species, as these forests are so rich, but I may remark that they are nearly tropical in character as the river is not more than 100 miles south of the tropical line. Sterculias or bottle-trees are not common.

In those parts of the river from which the scrub recedes the usual Australian vegetation reappears. The banks are thickly lined with *Melaleuca genistifolia*, a species very extensively distributed through marshy places in New South Wales and Queensland. It sometimes forms a dense brushwood as most species of tea-tree do in marshy situations. There is a brush of this kind on the north side of the river a little to the east of the

town. It is principally formed of the tea-tree and stunted trees of *Ficus aspera*.

Near the ford on the north bank are some fine specimens of *Hibiscus splendens* a species not often met with out of the tropics though it appears occasionally in river scrubs on the east side of the range as far south as the Hastings River. It is a tall shrub about 25 feet high, with flowers of a beautiful rose colour. The anthers are arranged in a pyramidal form of dark crimson. There are five deep red round stigmas which produce a splendid effect. Mr. Frazer the botanist who introduced it into England says of it, "I consider this the king of all known Australian plants. I have seen it 22½ feet high. The flowers measured nine inches across and were of a most delicate colour, literally covering the whole plant with pink and crimson." How strange it is that we scarcely ever meet with this species in private cultivation in Australia.

Near this *Hibiscus* there is rather a close growth of that singular Euphorbiaceous plant *Phyllanthus Ferdinandi*, a species which extends from Carpentaria to Port Jackson. It grows to a small tree and in flowering time the blossoms though small have a pretty effect. This is in the neighbourhood of where the forest has been cleared and its place is being rapidly filled up by a dense growth of *Castanospermum australe*, *Macaranga tanarius*, and *Cudrania javanensis*, all of which tend to form a dense thicket. Two introduced plants are also extremely common and thick. They are *Asclepias curassavica*, and *Tagetes glandulifera*. The latter grows here to a height which I have never seen attained anywhere else. There are large thick succulent plants to be found ten feet in height. The species is of South American origin, though generally called the African Marigold. It is spread as a weed also in New South Wales along the Hunter and Nepean Rivers.

A few sections of cleared ground on the west side of the north township are now covered with a large *Solanum* which I supposed

to be *S. verbascifolium*. It grows to a tall slenderly branched shrub with large leaves. It is indigenous in the neighbourhood, so that its spread is remarkable.

In the more open gum forests on the bank of the river *Eucalyptus tereticornis* is the most abundant. It is called the red gum here and is exactly like the red gum (*E. rostrata*) which lines all the rivers and creeks of South Australia and Victoria, and grows in so many inundated plains that it bears the name of flooded gum. The wood is of the same quality, and held in equal esteem. The only difference seems to be in the operculum or cap of the bud, which in *E. rostrata* has a small point or hollow beak on the top, and this in *E. tereticornis* becomes enormously prolonged into a curved horn. But on the banks of the Nogoa in Central Queensland I gathered from the same tree buds which were like *E. rostrata* and *E. tereticornis*. Baron v. Mueller thinks that they are closely allied. *E. acuminata*, Hook., was suppressed by Bentham as a species because of its being an intermediate variety; that is a form of *E. rostrata*, which approached *E. tereticornis* in the shape of the operculum.

In the same locality we have rather numerous specimens of *Careya arborea*, I am not aware that this tree has ever been recorded so far to the south before. It is a very common tree in the open forests of the tropics. Bentham has doubts if this species can be considered as the same as *C. arborea* of the Coromandel coast, the flowers of which are sessile and the fruit globular. The Australian species are all ovoid and the flower with a long pedicel. The blossom is seldom seen on the tree for as the bud opens the ring of stamens becomes detached and falls off as a graceful fringe to the ground. The blacks eat the seeds and I have heard it said that they roast and eat the fruit as well. One peculiarity has not been noticed in this tree, and that is the colour of the leaves. They are very often a brilliant crimson with every intermediate shade of yellow, orange, and red, a few of the older leaves being a pale grey green.

I noticed here and there a few species of that beautiful member of the *Boragineæ*, viz. *Corda myxa*. It has dense clusters of a pale yellow or pink fruit which is as viscid as birdlime, but eaten sometimes by the children ; the flavour is not unpleasant.

In the gum forests on the more open banks of the Burnett the trees are principally *E. teriticornis*, *Petalostigma quadriloculare*, *Tristania conferta*, *Jacksonia scoparia*, and *Melaleuca leucodendron*. All these are very abundant. *Eucalyptus corymbosa* is in thick sandy places when the undergrowth is of shrubby young plants or stunted plants of all the preceding species. Here also are found small species of *Hakea robusta*, a most valuable as well as beautiful timber tree, which has been with the exception of the saplings entirely cleared off the ground.

Wherever gravel from the river bed has been used along the railway as ballast, there is a rather thick growth of *Sesbania aculeata*. The seeds of this plant are eaten by the natives. It grows in all warm marshy places in Queensland. By many it is thought that this was the Nardoo which Burke and Wills thought came from the spores of a *Marsilea*. It is hard to suppose that any nourishment would be obtained from the spore-cases of the latter plant or that the natives would use it. Besides this the spore-cases are so few in number.

The *Fungi* noticed by me on the Burnett were not numerous, but I may mention having found very fine specimens of *Hexagon crinigera*, Fr., on a dead trunk of a tree in the forest. The pileus is covered with a coarse growth of branched bristles. It was considered rare in Queensland and the specimens small, but I found 20 or 30 together all over four inches in diameter. The ground in the neighbourhood was as thickly strewn as it could be with dead shells of *Helix Cunninghamsi* and *H. Incei*.

A tree held in great estimation here and not uncommon in the forests, is the *Myrtus gonoclada*. The only drawback to it is that the timber is so small, and the wood too hard to be worked with

ordinary tools. But where small tough wood is required there is nothing like it. It seems to me excellently adapted for wood engraving.

I must not pass over the occurrence of one little plant, if it were only to warn collectors to avoid it, and that is *Tragia Novæ Hollandiæ*, which like most species of the genus has very annoying stinging properties like the common nettle. I mention this as its stinging has been called in question by Dallachy. It belongs to the *Euphorbiaceæ* and is a twining herb with small leaves not easily noticed until its sting is felt. The species is widely spread and very abundant in the scrubs. With it is associated another Euphorbiaceous plant *Mallotus claoxyloides*, which gives such a peculiar smell to all the forests of the eastern waters, from the endeavour River in North Queensland to the Richmond River in New South Wales. *Mallotus philippinensis* is as abundant and extends to South China. The latter however extends a good distance into the interior and far from forest scrubs.

Entada scandens or the large Queensland bean does not come so far south as the Burnett river, nor *Abrus precatorius* with its beautiful scarlet seeds. But in place of them we have a twiner with beautiful blue seeds, *Rhynchosia Cunninghamsi*. This plant only differs from the South American, *R. phaseoloides* in having a large blue instead of a scarlet spot round the hilum. It is often seen twining round *Zanthoxylum brachyacanthum*. I mention with regard to this latter species that it is described as a slender tree, but on the Burnett the trunk is thick and the tree large, being very conspicuous for the stout conical thorns with which it is covered.

REMARKS ON SOME FLUVIATILE SHELLS OF NEW SOUTH WALES.

BY J. BRAZIER, C.M.Z.S., &c.

A few days ago I received a small parcel of Fluvial Shells from Mr. C. S. Wilkinson, Government Geologist for identifica-



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