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NOTES ON THE PHYSICAL AND ZOOLOGICAL RELATIONS BETWEEN AUSTRALIA AND TASMANIA.

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[*Read 14th July*, 1874.]

It is now some years since the Royal Society of Tasmania did me the distinguished honor of electing me one of its members, and I regret extremely that various occupations have always prevented me from contributing something to its transactions. My constant engagements in various duties have almost entirely discontinued those special investigations in natural science, in which I was formerly engaged, and all that I can offer now in the shape of original enquiries, are the observations of a traveller. But, fortunately, my opportunities for travel give me a very wide field for observation, and this, with a taste for it, and a good will to observe, have enabled me to pick up some facts which may not be unworthy the acceptance of the Society. The last two years have been spent in East Australia, and my short residence in Tasmania has pointed out curious relations between the natural history of that part of the Continent and this Island. There can be no doubt that Tasmania unites features in her natural history which is characteristic of distinct provinces in Australia. If we take the eastern half of the Continent, we may divide it into three portions, viz. : The coast region, characterized by a genial humid climate, with a vegetation in the temperate regions which is almost tropical in luxuriance, and generally Asiatic in *facies*, which is more decided as we proceed northward. We find tertiary rocks, mostly volcanic, and belonging to several periods, with no true tertiary marine rocks, and the beds, where fossiliferous, belonging to the Lower Mesozoic or Upper Palæozoic periods. Litoral deposits or raised beaches of any age are unknown. Where volcanic soils prevail or coal-bearing carboniferous rocks, the land is generally fertile. The second province is the table land, sometimes a purely mountainous region, almost entirely consisting of Palæozoic rocks, with intrusions of quartz Diorite, and in the lower deposits only mineral veins. Granite and other metamorphic rocks, giving rise to true lodes, are found throughout the whole extent. This granite is partly an altered rock, and probably not all of one age. I am inclined to think that the greater part of it belongs to rocks of the close of the Palæozoic period, but its alteration may be subsequent, and extending over a long range of time. Sometimes the surface, though as diversified in its rocks, is less mountainous, probably through weathering, and then the soils are accessible to cultivation.

As far as I have observed in Australia this occurs where upper and lower Silurian rocks are intruded upon by veins of Diorite. The whole of these regions, if we include the table land, have a distinct vegetation, alpine in the southern portions, and in the northern more Australian and less Asiatic than the vegetation of the coast regions in the same latitudes. The third region is the interior or western slopes of the dividing ranges. Here the land is generally level, and more or less of a desert character. Where the tertiary or desert sandstone prevails, the desert is absolute. The soil is loose sand, supporting either open forest with coarse grass, or dense shrubs of some kinds of Eucalyptus or Acacia. This region extends to the centre of the continent and beyond. This is also the litoral region of the south coast, where not mountainous. It is more Australian in its vegetation than any other portion, and possesses fewer strangers, that is, plants indigenous to other countries. It has very recent tertiary rocks, notably the desert sandstone, but whether marine or fresh water has not been determined, though probably the latter. Palæozoic rocks are not unknown, but do not often appear, though granites crop out continually. It appears that the two first regions are well represented in Tasmania, with, of course, certain modifications, which modifications I am inclined to suggest tend to show that the insularity of Tasmania is at least of some duration. The litoral features of the east coast of Australia are very strongly marked in this Island. Not, however, confined to the east side of it, but continuing all round the land which fringes the mountain ranges. The difference is, however, also marked. The climate is much affected by the gap of Bass Straits, and the vegetation is also less luxuriant, and quite temperate in character, while its affinities are more Polynesian and Neo-Zelandic, or Pacific than Asiatic. Tertiary, marine, and fresh water rocks are sometimes met with occasional litoral deposits. Tertiary volcanic deposits are also common, but belonging all to the earlier series. The light scoriaceous dolerites, trachytes, leucites, and olivines, with ash tufas, which *are never met at any great distance from the sea* in Australia, appear to be absent from Tasmania, as they are from the East Coast of Australia. The second, or table land region, is well represented in this Island, and with great diversity of features. We have high mountainous ranges, exposing precipitous rocks of various age, all however, Palæozic. The disturbance has exposed sandstone in flat-topped hills, peaks, and downs of silurian age, with syenitic granitic domes and peaks. The whole form of the mountains appears to be mainly affected by dioritic intrusions of post Devonian age or early tertiary dolerites. These show the island

to have been the centre of very active disturbance. The vegetation of these regions is distinct in character from the litoral province. The true Tasmanian features are there developed largely, and especially connected with Australia, but having peculiarities of their own. What these peculiarities are I shall refer to presently. It is said that if Australia were submerged to the depth of 600 feet it would cover all our marine tertiary rocks, and therefore it is concluded that the Continent has been uplifted something more than that since the later tertiary period. As the same marine beds are found in Tasmania, it is highly probable that this Island has been separated from Australia since the close of the Mesozoic period. The upheaval of the south coast of Australia has been very general and gradual, and though evidently Tasmania has not participated largely in it, there is enough to prove that it was once a much smaller island, or rather, group of islands, than it is now, and therefore less connected with Australia. When those tertiary rocks, containing shells, were at the bottom of the sea, the ocean must have washed a very considerable portion of the flanks of the mountains, and covered the most of the plains. These plains now unite the mountains into a single island, but then were channels between many large and precipitous islands. It would not be at all difficult to construct a map of the group of islands forming the land of Tasmania. A depression of 300 feet would, perhaps, be sufficient on the northern, and less than that on the southern side. I am not aware if any well defined "desert sandstone" has ever been found in Tasmania, but *a priori* we should conclude that the formation did not exist. It is supposed to be a limestone and subaeriel deposit, due to the weathering of arenaceous rocks. It includes occasionally drift wood, and rounded quartz pebbles. The conditions of its origin are as yet very obscure. If it be represented at all in this Island, it must be in those heaths or sandy plains whose soil is derived from adjacent granites, such as the coast plains north of Falmouth.

We find on the east side of Australia, even in the northern portions, very well marked deposits, which tend to show the age of some of the extensive dykes. Thus, at Gympie, a gold diggings, 120 miles north of Brisbane, we have quartz reefs intersecting Diorite, the whole intruding on Devonian rocks, which are much disturbed in consequence. We have here also ash beds or tufaceous rocks which show proximity to the point of ejection. The Devonian *facies* of the fossils is very decided, the species being identical with European forms. *Strophomena rhomboidalis*, Phillips, is very common and this shell occurs on the Silurian Devonian and Carbonferous rocks over large areas of the globe. It has been figured and described by

Wahlenberg, Sowerby, Phillips (Geol. of Yorkshire, vol. 2, plate 7, fig. 10) ; and Davidson, Monog. Brit. Carb. Bracheopoda, in the monographs of the Palæontographical Society, p. 119 t. 28, fig. 2. With it we find the *Aviculopecten limæformis*, Morris, described in Strzelecki's work as occurring in the Eastern Marshes, Tasmania. We have also the well-known Devonian forms of *Productus cora* D'Orb. *Spirifera bisulcata*, Sowerby, *S. vespertilio*, *S. undifera*, and *Pleurotomaria carinata*, Sowerby, and *Fenestella fossula* Lonsdale. These forms are all abundantly represented in Tasmania, especially in the Devonian rocks about Hobart Town, Brighton, &c., &c. Three facts of importance can be gathered from the occurrence of these fossils in the gold bearing rocks of Queensland. 1st. Such deposits are thus associated in point of time with the period of disturbance best represented in Tasmania. Secondly, the strange uniformity which these fossils show, in species extending over wide areas, the lower we descend in geological formations. Last of all, the constant association of gold with Diorite in Australia, especially Eastern Australia, which igneous rock is very extensively found also in Tasmania. It is the deliberate opinion of geologists that the only deposits of gold in paying quantity in East Australia are found in connection with, and affected by, the diorites or dioritic veins. I may add that this is my own experience, as drawn from a personal inspection of the following East Australian goldfields, Sofala, Gulgong, Hill End, Tambaroora, Wattle Flat, Summerhill Creek, Gympie, Monkland, and Peak Downs. I may perhaps venture to ask this further question of Tasmanians —have the dioritic deposits ever yet been fairly tried in this Island? Silurian rocks used to be considered almost *sine qua non* for gold deposits, and that because the best gold fields occurred where only such rock has appeared, the others, of course as it is now ascertained having been denuded away. It is however, certainly established that the richest gold deposits have been thrown down after the Devonian period, though perhaps much later.

Secondary formations with characteristic fossils are found scattered through the litoral zone, and that of the table land. Oolitic fossils are found at Gordon Downs, near Peak Downs. At Maryboro Cretaceous beds are represented. The same formations, representing both the Upper and Lower Cretaceous, are found stretching across the whole western side of the dividing range of North East Australia, forming vast plains, which are the principal feature of Queensland scenery in these quarters. Mr. Daintree is of opinion that the Desert Sandstone (upper tertiary) once extended over all this country, because of its existence in outliers, or in *situ* on the main

watersheds, and by its pebbles and conglomerate, which are strewn everywhere over the plains. Plant beds belonging to two separate formations are found in East Australia, and all identical as far as the carboniferous forms are concerned, with species occurring in Tasmania. There is abundant evidence, therefore, to prove that the island of Tasmania is connected lithologically and stratographically with the axis of the Cordillera, an axis which has evidently been subjected to a great deal of subsidence. Whether such subsidence is the cause of the gap of Bass Straits can be as yet only a mere matter of speculation, though a very tempting field for theory.

The Quaternary formations of North Western Australia are replete with interest, and offer a clue for the solution of some of the problems to which the plant beds of Hobarton and Launceston have given rise. The occurrence of volcanic cones, with ash and lava deposits, on the table land, has changed the course of some of the ancient rivers. They exist now in the form of swamps or lagoons, containing bones of the extinct terrestrial fauna of the continent. Thus a rich series of remains have been brought to light, and forms which were doubtful or problematical are by the discovery of missing links completely identified. Two or more species of Emu are thus made out, also a species of Moa, about the size of the *Dinornis robustus*. A large fermur was found in the Leichardt Downs, and it is now in the Sydney Museum. The carapace of more than one fresh water species of tortoise was found on the Darling Downs, besides extinct crocodilian remains mingled with those of existing species. It is an interesting fact that now the crocodile is almost confined to the tropics, and never any distance from the sea shore, but then they extended a very long way inland, and as far south as the latitude of Brisbane (27 deg. 28 min.) The fossil mammalia made known from the Darling Downs deposits, bid fair to rival in extent and variety our existing fauna. No less than ten different species of Diprotodon are now known from fossil bones, with two or three species of *Zyzomaturus* and one of *Nototherium*. All these gigantic mammals (some perhaps larger than an elephant) are now proved to belong to the Phalanger, that is, the oppossum, flying squirrel, and native bear tribe. In fact the dentition of all the three above named fossil genera has the closest resemblance to that of a native bear or *Phascolarctus*. This species is the only one known, and inhabits about a third of Australia, as far as the tropics on the eastern side. Neither this animal nor the Dingo are known in Tasmania. As far as I am aware, no fossils of these extinct animals above enumerated have been discovered in this Island,

which tends to confirm the general evidence of the separation of Tasmania from Australia in very remote periods. The *Thlyacoleo* once appealed to as an extinct form of our existing Tasmanian *Thylacinus* is now proved to be a species of squirrel of gigantic size. It was though once to be a formidable carnivore, and a match for the *Diprotodon*. The *Thylacinus cynocephalus* and *Sarcophilus ursinus*, now peculiar to Tasmania, are both found fossil in Australia. This induces one to enquire whether the negative evidence is sufficient to conclude that none of our larger Tasmanian mammals were found in this island. Among some fossils submitted to me by the curator of the Brisbane Museum, Mr. Steiger, was a very peculiar one from the Darling Downs, thought to be a reptilian scute or a fragment of a chelonian carapace. It proved to be a very valuable missing link, a fossil tooth of a Ceratodus. A living *Ceratodus* (*C. Fosteri* Günther) was found in 1869 in the River Burnett, in Queensland, and since then other species have been found in the Mary and Fitzroy rivers. The only previously known species of the genus were teeth found in very low secondary rocks, that is Triassic. The occurrence of a fossil form of larger size, tends to carry the genus one step further back, and is another fact in the many which show how secondary forms survive in the Australian continent, of which the *Trigonia*, *Marsupialia*, *Cycadeæ*, &c., &c., are instances.

We find in the botany of eastern Australia a very uniform character, even though it ranges in climate from equatorial to temperate. I have already stated that Asiatic species prevail in the northern part. But sometimes anomalous and tropical forms have a very wide range. Thus our cabbage tree palm is found abuudantly as far south as the Shoalhaven River, and is also common about Port Denison. Besides *Corypha Australis* we have the beautiful *Seaforthia elegans* ranging from Jarvis Bay to the lat. 19 deg. But I must say that I have some slight doubts as to this. Baron von Mueller has lately shown that a species long mistaken for *S. elegans* is a palm of an entirely different genus, *Ptychosperma Alexandriæ*, and the species grow side by side in some places, yet in the far north I think the latter quite supplants its graceful ally. Nothing more beautiful can be imagined than the dense scrubs of this palm in the northern regions, surrounded by a most luxuriant vegetation of ferns and dark evergreens, and bound together by vines and creepers. These make the scrubs impassable almost, for the huge serpentine folds of one creeper (very often *Entada scandens*) will cover twenty or thirty trees, and over an acre of ground. When it is remem-

bered that *Entada scandens* has pods six feet long, and seeds the size of the palm of the hand the peculiarity of tropical vegetation can be imagined. *Abrus precatorius* (whose brilliant scarlet seeds, with black spots, makes them so well-known as objects of curiosity) is as common on the tropics of Australia, near the coast, as it is in the West Indies. *Mucuna gigantea* (Indian) is another of the great creepers of the scrubs with *Laportea gigas*, or nettle tree, extends from the south to within the tropics. It has been mistaken, however, for another of the of the Urticea, *L. moroides*, which is very common in the tropical scrubs. The sting of these species leaves a smart which lasts for a very long time, and is felt at every change of temperature for weeks after. It is a smaller shrub with fruit something like mulberries. One very peculiar character which prevails in the scrubs of north-east Australia is the strong odour that pervades them. It is exactly like baked bread or burnt bread, and is so strong that in those towns which are built near scrubs, such as Maryboro, the odour becomes almost distressing before or after rain. This is due to an euphorbiaceous plants named *Claoxylon australe*. In the same section of the order (Crotons), we have *Mallotus*, a species of which, *M. Philippinensis*, we have almost all along the east coast of Australia. This species is also widely spread over tropical Asia, extending to South China, and is principally remarkable now for possessing wonderful vermifuge properties, which, render certain preparations of it valuable as a drug.

In travelling northwards, along the coast, as the islands within the barrier reef become more frequent, and the coast line more mountainous, the prevalence of coniferous vegetation is very striking. Every island and every mountain is thickly clothed with pines. On the coast these are all of one species, *Araucaria Cunninghami*, a tree resembling *A. excelsa* in general aspect and foliage, but the cones very different. *A. Bidwilli*, with its splendid spires of leaves, occurs inland, and in four places. It is called Bunya Bunya by the natives, and the seeds, after some preparation, are eaten. If we take the conifera as one standard of comparison between the flora of East Australia and Tasmania, we find a very marked difference. I don't pretend that it is the best standard, but, as this order is low in the scale of specialized functions, its species have a wider range, and if any difference is perceived in the order, other orders will differ more widely, and the provinces possess well marked characters. Now Tasmania has not a single indigenous Araucaria, and only two Australian conifers are found in the island namely, *Frenela rhomboidea* and *Podocarpus alpina*. On the other hand it has genera which

are peculiarly its own, and some with affinities that are not at all Australian. Thus *Diselma Archeri* is endemic, as also *Microcachrys tetragona*, and the genera are not found outside our island. *Athrotaxis*, with three endemic species, is a genus so nearly allied to the Chinese *Cunninghamia* that Zuccarini proposes (in Siebold's Flora of Japan ii. 9) the union of the two. *Dacryduim Franklinii* is another of our Tasmanian pines (the Huon pine) but this genus, though dispersed over the Indian Archipelago and New Zealand, is not so far known Australian. *Pherosphæra* is another Tasmanian genus of pines, unknown outside the island. These facts have a remarkable bearing on the question of the relations between Tasmania and Australia. Time alone prevents me from extending it to other orders.

It will afford some idea of the general flora on the coast near the tropics, if I submit just a list of names which I find in my note book, as observed by me at Port Denison, Port Mackay. Thus, among ferns I notice, *Acrosticum aureum, Nephrodium molle, Pteris tremula, Doodia media, Adiantum hispidum, Phymatodes ixioides.* The other plants I shall read just as they occur in my note book, without reference to the order to which they belong : *Sponia aspera, Celtis paniculata, Hibiscus tiliaceus, Hibiscus heterophylla, Solanum verbascifolium, Commersonia echinata, Cupania sp., Morinda jasminoides, Lyonsia straminea, Smilax lutifolia, Vincetoxicum sp. Ipomea palmata, I. caprea, Alphitonia excelsa, Alpinia cerulia, Callicarpa pedunculata, Flaggelaria indica, Brassaia actinophylla, Sarcocephalus cordatus, Dendrobium undulatum, D. teretifolium, Cymbidium canaliculatum, C. Fitzalani, Anacharis alsinastrum, Acanthus ilicifolius, Dalbergia chiusa Thespisum populneum, Exocarpus latifolia, Excœcaria agallochia.* The latter is said to be one of the most poisonous plants known, almost rivalling the West Indian Manchineel, and belonging to the same order, Euphorbiacea. The smoke from the burning wood is said to produce blindness, and the milky juice will cause ulcers. The latter, however, I have tried, but without success. The whole coast is also fringed with *Ægiceras fragrans*, a kind of mangrove which is common in Sumatra, Java, &c. Near the coast *Pandanus australis, Avicenna tomentosa* (mangrove) *Heritiera officinalis* (looking glass tree of India) and various fig trees are common. Further inland, on the plains, we have *Tristania conferta, Careya Barringtoniæ, Eucalyptus corymbosa, E. tereticornis, E. Siderophoia* (?) A species of iron bark, but perhaps distinct from that found further south, *E. platyphylla.* This is a gum tree with immense leaves and silvery bark only growing in the poorest soil in the tropics, but admirably adapted for shade in desert regions. See

Müeller's last report to the Acclimatization Society. The lemon scented gum, or *E. citriodora* grows only on the mountains on the tropics. It is without exception the finest of our gum trees, with a smooth bark, and timber almost as close-grained as European box. The leaves emit so powerful an odour of oil of lemon as to be quite pungent. Use has been made of the essential oil by Mr. Bosisto, of Richmond, Victoria, whose original researches into the properties of the Eucalypti have led to their being largely utilized for the purpose of commerce. Mr. Bentham, who has not seen the trees in growth, supposed that *E. citriodora* might be a variety of *E. corymbra*, but the trees are as different as possible.

In comparing the list of introduced plants which have become weeds in East Australia and Tasmania, the difference is very striking, but these differences depend no doubt entirely on soil and climate. Thus you have in Tasmania a large muster of European forms in which the British predominate, owing to the intercourse being chiefly with those islands. It is difficult, however, to account on these grounds alone why some species spread so rapidly and not others. Thus *Hypochoeris glabra* seems to have taken possession of all your meadows about Hobart Town, and you have already to struggle against such intruders as *Cardnus lanceolatus*, *Cardnus Marianus*, *Ulex europeus*, *Rosa rubiginosa*. In some parts of Victoria it is *Medicago denticulate* and *Rumex acetosella*, the latter a most dreadful pest to the farmer. In Adelaide and indeed through all the rich plains of South Australia on red soils, *Cryptostemma calendulacea* excludes all other vegetation affording rich green feed in spring only, and then utterly disappearing, except that it leaves a mass of woolly pappus behind it which is a very serious inconvenience to wool growers. In September and October the country is one golden mass with its flowers. It is said to be from the Cape, and was unknown in Australia 25 years ago. But in the more northern part of east Australia, quite a different introduced vegetation presents itself. There it is *Sida rhombifera*, *Lantana camera*, *Verbena bonariensis*, *Asclepias curasavica*, *Opuntia vulgaris*, *Ageratum Mexicanum*, and *Alternanthera nodosiflora*. *S. rhombifera*, which is a malvaceous plant, bids fair to be an alarming pest. It is a short twiggy shrub, as tough as whalebone, covering every inch of good soil with a dense scrub of about two or three feet high. It is almost impossible to cut it down, owing to the toughness of its fibre, which may be utilised one day. Preparations of it I have seen made into ropes, &c. It is whiter and more silky than the finest flax. I have been in no part of the tropics where it has not become a common weed. *Asclepias curasavica* is another plant

from Central America. It is a very handsome garden flower, with valuable medicinal qualities. It can be more easily got rid of, but is chiefly remarkable for the rapid way in which has diffused itself. One observes it everywhere. With it, curiously enough, we have a butterfly of great beauty introduced from Central America or California, *Daneis erippus*. This insect was unknown in Australia until the plant just named began to spread.

The mention of a Lipidopterous insect causes me just to allude to the great difference there is between East Australia and Tasmania in the department of natural history. Large and beautiful diurnal lepidoptera are very common in East Australia, whereas they are uncommon or unknown in this Island. In the tropics the variety and beauty is astounding, and the numerical abundance of beautiful species is equally surprising. I append a list of the names of a few of the more common noticed by me, and I may add that I have seen no such species in Tasmania, *Daneis limniacea*, *D. erippus*, *Hypolimnas lassinassa*, *Eurycus cressida*, *Ornithoptera*, *Richmondiana*, *Papilio sempronius*, *P. erithonius*, *Euplea*, *Calydryas*, *Jalmena ictinus*, *Acmæa pygmea*, &c. These are the common species which one meets everywhere, but the list would be very much extended if a list of species were given.

I proposed in this paper to say something about the land and fresh water mollusca, but I find that is so connected with what I should wish to remark about the mollusca generally, that I must forego any observations, and hope that perhaps I may be able to return to the subject before I leave the island. I will say, however, that the land mollusca afford a very valuable standard of comparison for small differences in the natural history of different but neighbouring provinces. I have found in North East Australia that where the peculiar features of situation or soil gave a well defined character to any locality, the land mollusca were always also peculiar and well marked, and if the district was small, the habitat of such peculiar species or variety was confined. Thus *Helix Whartoni* is found confined to one small island inside the Barrier Reef, and *Helix Coxeni* to another. I regard one of these at least as a mere variety of *H. Incei*, to which also many other so called species may be reduced. But they are well marked, and constant varieties of one form, and restricted now by geographical features to one habitat. On the mainland, however, in open country, one species sometimes has an immense range without any variation. Thus *Helix pachystyla* is found all over the plains of the table land as far as Peak Downs. ~~To the south its place is taken by a s~~ *H. pachystyloides*, is a northern form, and its place in Carpentaria seems to be taken by *H. pomum*.

~~variety of *H. infurias*~~. The land shells of Tasmania are all strongly marked species, with very little affinity with those of the east coast, but with analogues in New Zealand. These facts do not bear interpretation yet, but they are in keeping with what is observed in other branches of natural history. With these remarks I must close for the present my observations on the relations between the natural history of East Australia and Tasmania, hoping to return to them on a future occasion.

THE LAUNCESTON TERTIARY BASIN.

Second Paper by R. M. Johnston.

[Read 11th August, 1874.]

Having devoted some spare time to the further investigation of the Launceston Tertiary Basin, the taking stock of whatever information I have been enabled to glean since my last communication, may not be uninteresting to the members of the Royal Society.

The association of the fossil pines (so abundant throughout the district) with various leaf impressions of other exogens is of considerable importance, as it favours the inference that they belong to the same period. Some, however, who are entitled to respect, hold a different opinion, and we must confess that although the leaf impressions referred to are, undoubtedly, recent, and belong to the system in which they are now found, it is by no means conclusive that the silicified pines, especially the waterworn specimens, are of the same age. It is quite possible that much of the latter may be the re-wash of a former period. Without committing myself, I may venture to state that my recent discoveries at Stevenson's Bend, and Corra Lynn, tend to confirm the opinion that they are of about the same age as the Breadalbane lignites, at any rate, not older, as the *tuff* or *wacke* overlying the lignite there, contains the remains of a perfect forest of pine trees which, certainly, could not have been washed from an older rock, and no evidence of a foreign matrix can be discerned. Further, as there are numerous instances of the smaller branches maintaining their natural connection with the parent stem, it is almost conclusive that they have not been removed from an older rock, but are really exposed in the original matrix.

Corra Lynn Agglomerate.

In an exposed cliff section, on the North Esk, near to Corra Lynn, figured by me in a former paper (No. 33), I recently discovered the pine Banksia and two other undetermined woods.* One of the latter shows in a transverse section, large porous vessels scattered irregularly, as in the Eucalyptus. The vertical tangential section, however, is very different, the medullary ray bundles being very large, vertically elongated, and have the several rows of cellular fibre presenting a square instead of a roundish net work. Of the other undetermined wood, I have not had time to make a proper transverse section, but I have satisfied myself that it

* I am indebted to my friends, Messrs. A. Weedon and T. Atkinson, for the discovery of two of these woods at Corra Lynn.